American Journal of Public Health
and THE NATION'S HEALTH

Volume 28 July, 1938 Number 7

Investigation of Early Syphilis*

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IN May, 1935, the Departments of Health of the City of Buffalo and the State of New York entered into a coöperative arrangement for the development of more effective local measures for the control of syphilis. The program decided upon included as an essential item a field investigation of all early cases coming to the knowledge of the City Health Department through the usual channels of physicians' reports and clinic admissions. The purposes of the investigation were: (1) by tracing backward in time, to discover and bring under treatment the persons from whom infection might have been received; and (2) by forward extension to discover those people who had been infected or exposed to risk by the original patients.

The investigation was concerned chiefly with individuals with whom the patients had been in sexual contact, either prior or subsequent to their own dates of infection; but also included efforts to reach closely associated nonsexual contacts. When the investigation led to discovery of infected persons, it was extended to include the antecedent and subsequent sexual contacts of such individuals. The chain of infection was followed, both backward and forward as far as possible, but extension beyond the patient's direct contacts was seldom practicable.

This study deals with cases investigated between June 1, 1935, and June 30, 1937. Only cases are included which at the time of admission to clinics, or of report by the attending physician, were satisfactorily identified as early syphilis in the primary, secondary, or early latent stage. All cases were among persons giving histories which placed their dates of infection within the preceding year and who had not been previously reported to the City Department of Health. The 488 cases falling into the above category were designated as "initial" cases. They included 464 cases of genital syphilis and 24 cases of extragenital syphilis. Of the 464 genital cases, 48 per cent were primary, 39 per cent secondary, and 13 per cent early latent.

* Read before the Epidemiology Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 8, 1937.

ANTECEDENT CONTACTS

Success in tracing syphilitic infection to its specific source depends on conditions peculiar to venereal diseases. In non-venereal diseases, it may usually be taken for granted that the patient is willing to give information, but he is rarely able to identify a specific source because he himself usually has no way of knowing the exact time and place where the infection was contracted. Again, the patient is by no means the sole, nor even necessarily the most important source of information. Equally pertinent facts may be available from many other informants. In contrast to most other diseases, the circumstances under which genital syphilis is acquired, except among prostitutes and very promiscuous males, can usually be stated quite exactly by the infected person. He is in a position to know with a considerable degree of certainty when infection was contracted and to what particular individual he was exposed. Such information is available from no other source than the patient himself so that the first essential to success in investigation is willingness on the part of the patient to give fully all facts that will aid in identifying the source of infection. Without this coöperation little or no progress can be made.

Since the first and most important factor in successful investigation is the patient's unreserved coöperation, it is desirable to classify patients primarily according to their willingness to give essential information, which is more difficult than at first appears.

It is easy enough to classify those who deny exposure or flatly decline to give information about it, and it is equally simple to designate as coöperative those whose information leads directly to the discovery and identification of infectious syphilitics who verify the account given by the patient, but many histories elicited in a large city are of a different kind. The patient, with apparent frankness, may give names of persons who cannot be located at the address given or who on investigation are found to be non-syphilitic; or he may profess not to know the names and addresses of the persons with whom contact is admitted. In such cases, it can only be a matter of surmise whether the patient is sincerely coöperating or is purposely giving misleading information.

Among the 464 cases of early acquired genital syphilis there were 33 patients—for the most part, seen only once in the clinic—who were lost from observation before any helpful information had been elicited. The remaining 431 are classified in Table I with respect to their apparent willingness to give information which would lead back to their specific sources of infection.

TABLE I

Success Achieved in Obtaining Information Which Might Lead to the Identification and Examination of Specific Sources of Initial Syphilis Cases—Buffalo, N. Y., 1935–1937

Classification	*Number of Initial Cases*	*Per cent of Investigated Cases*
Declined to give information	44	10
Denied antecedent contact	17	4
Apparently willing to coöperate but giving information so indefinite or incorrect that it did not serve to identify persons named	236	55
Willing to coöperate and giving information leading to the identification and location of persons named	134	31
Total	431	100
Lost from observation before investigation was instituted	33	
Total	464	

As shown in Table I, investigation failed in 14 per cent of the cases because of the patient's unwillingness or inability to give essential information. This group (61 cases) includes 10 instances

in which the attending physician declined to give information, and 17 persons who denied having had sexual contact. Ten persons admitted sexual contact but declined to reveal the identity of the persons concerned, and 8 refused to divulge any information. The remaining 16 admitted contact only with their marital partners, who on examination were either non-syphilitic or were infected subsequently and were therefore not the source of infection of the initial case.

It appears at first glance that a larger proportion of the patients were fully coöperative, since the information which they gave led to the identification, location, and interview of the persons specifically named as sources of infection. It is not certain, however, that the figure given has precisely this meaning since only one-half of the antecedent contacts identified were clearly proved to be suffering from syphilis in a presumably infectious stage. In the remaining cases the information given led only to persons who on examination were found to be non-syphilitic or showed evidence of syphilis which was presumably non-infectious. It may be doubted whether the information originally given was complete. If these patients were to be transferred to the uncoöperative group, where they perhaps properly belong, the effect would be to double approximately the number in this class and reduce by one-half the number certainly coöperative.

Between the extremes of definite refusal to coöperate and effective coöperation as verified by the result, is a large class, 55 per cent of all 431 patients, who either professed to be unable to identify their contacts by name and address or gave information which could not be verified by locating the persons named. Of the 47 females included in this group, 20 were public prostitutes and a large part of the remainder might be classed as clandestine prostitutes. The 189 males were for the most part individuals who named as their sources of infection prostitutes, or women who had been picked up on the streets or in dance halls.

Under the conditions of this study, the principal cause of failure seemed to be the inability of the patients to give definitive information, because of their lack of personal acquaintance with the persons from whom infection was contracted, rather than actual refusal to coöperate. However, it is quite possible that some of those who appeared to coöperate were in fact withholding information. If this were true, more diligent effort might have improved materially the end results. In so far as failure was due to the informant's own lack of knowledge, it is not certain that more persistent effort would have yielded different results.

The antecedent sexual contacts of the 134 cases in which investigation resulted in the location of one or more of the persons specified, numbered 197 individuals, while those of the 236 cases in which contacts were designated but could not be located, numbered 240. In addition, the 236 patients admitted contact with an unknown but considerable number of persons whose names they had not tried to ascertain. Ninety per cent of the contacts of the fully coöperative group were residents of Buffalo as compared with 50 per cent of the 240 contacts designated but not located. Thirty per cent of the contacts in which the investigation was successful were commercial or clandestine prostitutes, as compared with 75 per cent of those in which individuals were named but not located. Forty-nine per cent of the contacts in successful investigations were friends or acquaintances of the initial cases but this was true of only 23 per cent of those in cases when individuals were named but not located. Of the contacts designated and located 21 per cent were

marital partners as compared with 2 per cent of the named contacts who could not be found.

These findings are such as might be expected from the manner in which the two groups of patients were classified. Other factors not susceptible of measurement were in all probability concerned in the success or failure of the investigations of the 464 initial cases.

By investigating the original 464 cases, 66 infectious syphilis cases were discovered among antecedent contacts, that is, contacts with infectious syphilis were found for 14 per cent of the cases. Twenty-six of the initial cases were apparently infected by a marital partner. Excluding cases so infected, 9 per cent of the initial cases had been in contact with infectious cases of syphilis. In other words, assuming generally accepted views as to stages of syphilis in which the disease is transmissible, the source of infection was found for 14 per cent of all cases and for 9 per cent of cases other than those maritally infected.

The coöperation of 134 initial cases was attested by the location of most of their designated contacts. The contacts named by 4 of the 134 patients refused examination. Ninety-four of the remaining 130 patients gave histories of contact with one, and 36 with more than one, person. In the latter group, 16 patients admitted contact with "several" or "many" persons. In designating the probable source of infection of each case, contacts found to have infectious syphilis were chosen in preference to contacts with latent syphilis or apparently non-syphilitic. The status with respect to syphilis, of the 130 contacts selected as probable sources of infection, according to the method described is given in Table II.

The table shows that 51 per cent of the suspected sources of infection were suffering from presumably infectious syphilis. This proportion, while large, is perhaps less rather than greater than one would expect to find.

TABLE II

Results of the Examination of Antecedent Sexual Contacts of 130 Coöperative Initial Syphilis Cases, Buffalo, N. Y., 1935–1937 *

Stage of Syphilis of Antecedent Contact at Time of Contact with Initial Case	*Number and Per cent of Initial Cases in Antecedent Contact with Persons in Various Stages of Syphilis*	
	Number of Cases	*Per cent of 130 Cases*
Infectious syphilis	66	51
Presumably non-infectious syphilis	32	25
Syphilis, status as to infectivity unknown	17	13
Non-syphilitic	15	11
Total	130	100

* These results do not include all antecedent contacts examined, but only the "most infectious" contact of each initial case. Thus, if a given individual admitted contact with two persons, one of whom was found to have infectious syphilis, and the other to be non-syphilitic, the former person was selected. In other words, results are given in terms of the most probable sources of infection.

The 32 patients whose examined contacts were believed to be non-infectious syphilitics include 13 individuals who admitted contact with other persons. These additional contacts could not be found but might have been the true sources of infection. The remaining 19 maintained that the persons identified and examined were their sole contacts. These 19 patients together with the 15 others whose contacts were apparently non-syphilitic are of considerable epidemiological interest. If there were any way of proving that the information they gave was reliable, the possibility of the transmission of syphilis in other than its early infectious stages and by persons without clinical manifestations of the disease would suggest itself.

SUBSEQUENT CONTACTS

The contacts of the 464 initial cases subsequent to date of infection were investigated in exactly the same manner as the antecedent contacts. Excluding the 33 lost from observation, the remaining 431 are classified in Table III according to their apparent willingness to give information as to subsequent contacts.

TABLE III

Success Achieved in Obtaining Information Which Might Lead to the Identification and Examination of Persons Exposed to Infection by Initial Syphilis Cases—Buffalo, N. Y., 1935–1937

	Number of Initial Cases	Per cent of Investigated Cases
Declined to give information	21	5
Denied subsequent contact	280	65
Apparently willing to coöperate but giving information so indefinite or incorrect that it did not serve to identify persons named	48	11
Willing to coöperate and giving information leading to the identification and location of persons named	82	19
Total	431	100
Lost from observation before investigation was instituted	33	
Total	464	

The cases in which subsequent contact was denied was 65 per cent, as compared with 4 per cent with a denial of antecedent contact. Only 11 per cent of the patients belonged to the class of individuals willing to coöperate but giving unsatisfactory information as to subsequent contacts, whereas 55 per cent of the same patients were in this group with respect to their antecedent contacts. The proportion of patients willing to coöperate and giving identifying and locating data, 19 and 31.0 respectively, were not significantly different for subsequent and antecedent contacts.

The 82 coöperative patients gave histories of sexual contact subsequent to infection with 112 individuals, of whom 60 were marital partners and 52 were extramarital contacts. Of these 112 persons, 92 were located and 90 examined, and 76 were found to have syphilis.

In evaluating these results, consideration must be given to the fact that many subsequent contacts were also contacts prior to the date of the patient's infection. In fact, it was determined that the dates of infection of 21 syphilitic individuals who were both antecedent and subsequent contacts antedated the dates of infection of the initial cases to which they were related. In presenting findings in Table IV as to the status with respect to syphilis of the 90 subsequent contacts examined, account is taken of the 28 individuals examined who were both antecedent and subsequent contacts.

Since the date of infection of each subsequent contact is believed to have been later than that of the initial case,

TABLE IV

Results of Examination of 90 Subsequent Contacts of 82 Coöperative Initial Syphilis Cases—Buffalo, N. Y., 1935–1937

Status of Contact as to Syphilis	*Subsequent Contacts*	*Antecedent and Subsequent Contact*	*Total*
Infectious syphilis	43	11	54
Presumably non-infectious syphilis	2	7	9
Syphilis, status as to infectivity unknown	10	3	13
Non-syphilitic	7	7	14
Total	62	28	90

it appears that 43 individuals contracted syphilis as the result of exposure to an initial case. Fourteen individuals exposed to the initial case both prior and subsequent to infection were negative upon examination. Hence, of 57 non-infected persons known to have been exposed to early syphilis, 43, or 75 per cent, contracted the disease. This high proportion is of interest in comparison with the proportion of coöperative initial cases for which an antecedent contact with infectious syphilis was found, namely 51 per cent, and indicates failure to discover the actual source of infection in many instances.

CONTACT INVESTIGATION AS A CASE FINDING PROCEDURE

From the health officer's point of view, the object of investigating cases of early syphilis is to discover new infectious cases and to bring such cases under supervision and treatment. The question arises as to whether the case investigations in the present study fulfilled the purposes for which they were intended, and were sufficiently successful to warrant carrying them on permanently.

During the study, 461 contacts were named and 275 located and examined. Of the 275 examined, 233 were sexual contacts and 42 were incidental contacts, for the most part members of the same household as the initial case.

Among the 275 contacts, there were 202 cases of acquired syphilis and 2 of congenital syphilis of whom 55 were themselves initial cases; that is, although the individual concerned was reported to the Health Department independently, and was accordingly defined as an initial case, investigation revealed that he or she was also a contact of another initial case.

Exclusive of these 55 contacts who were themselves classed as initial cases, there remain 149 syphilis patients brought into the record during the study, 97 of whom were already known to the Health Department, and all such cases had received some sort of treatment. Thirty-four of the 97 cases were delinquent in treatment at the time they entered the study.

Thus, the study resulted in the finding of 52 new syphilis cases, not under treatment or without histories of previous treatment. Of these 45 were among individuals with presumably infectious syphilis.

A larger series is now being collected in Buffalo, not only for the purpose of evaluating case investigation as an administrative procedure but also with the hope of adding to our knowledge of the epidemiology of syphilis. There are many facts regarding the transmission of the disease which remain unknown, and in general these facts are of such a nature that they must be determined by field observations on human beings. The problem as it now presents itself seems to be twofold: (1) reaching a decision as to practicable control methods, and (2) acquiring knowledge as to the essential details of the epidemiology of syphilis.

Nutrition Services in Maternal and Child Health Programs Under the Social Security Act*

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THE claim of nutrition to a place in a maternal and child health program rests on two major premises: (1) that good nutrition is essential to optimal development; and (2) that the nutritional status of mothers and children can be improved by educational activities. The relation of nutrition to the growth and development of children is too well established for discussion at this time. The far reaching effects on public health of good nutrition of mothers during the childbearing period has been given vigorous expression by two Scottish writers in a recent notable review of [1] the dietary requirements during pregnancy and lactation. I quote from the summary:

> Since the maternal diet in pregnancy and in lactation inevitably affects the well-being of the infant, the health of the whole population depends to a greater or less extent on the feeding and nutrition of the mothers.

In some branches of public health, recognition of the importance of any single health factor leads to direct action as well as to educational activities. Children whose parents cannot arrange with the family physician for immunization against diphtheria are protected at public health conferences. But children whose parents are not providing adequate food and the other essentials of good nutrition are not protected against undernutrition or malnutrition by the direct action of the health department, except by an occasional sample of cod liver oil or canned or dried milk received at an infant or preschool conference. The nutrition services carried on by a maternal and child health division are almost entirely educational in nature; education of the families and individuals to make the most of whatever resources they have, and education of public and private agencies in the community to the need for supplementing inadequate resources.

Have we any evidence that education in nutrition results in healthier children? Emboldened by hearing an eminent statistician assert that we do not need to be in doubt about everything that has not been proved to have statistical significance, I venture to say "yes." There have been only a few attempts to study the influence of nutrition teaching but these few give us courage to go on. Doubtless many of you can add from personal experience to the studies that come to my mind: the retardation of dental caries among children attending the nutrition clinic

* Read before a Joint Session of the Food and Nutrition, Child Hygiene and Public Health Nursing Sections of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 8, 1937.

of the Forsyth Dental Infirmary [2]; the improvement during 4 of the leanest depression years in the nutritional condition of preschool children examined by pediatricians and dentists on the staff of the Massachusetts Department of Health [3]; and, still nearer home, the gratifying findings regarding the influence of education on the food purchasing habits of low-income city families studied by the Association for Improving the Condition of the Poor of New York City.[4]

As in other activities for human betterment, much of the pioneering in community nutrition was done by far sighted private agencies. Years before the passage of the Social Security Act, however, a few state departments of public health, either convinced by scientific evidence or acting upon faith, inaugurated nutrition services. The Health Departments of Massachusetts, Connecticut, and New York have maintained such services continuously for more than 10 years. At least 4 other states had employed nutritionists at some time in the past—when federal funds were available for maternity and infancy services or when state legislatures were relatively liberal in making appropriations for public health. It seems safe to say, however, that the principal stimulus to the establishment of nutrition services in maternal and child health programs of public agencies has been through Title V, Part I of the Social Security Act, which authorizes the Secretary of Labor to make grants-in-aid to the states for the extension and improvement of the health of mothers and children, especially in rural areas and in areas suffering from severe economic distress. In advising the Children's Bureau on the administration of maternal and child health services under the Social Security Act, the State and Territorial Health Officers have mentioned the extension of nutrition programs among the public health activities for which federal funds may be used.

Two of the 3 states that pioneered in the continuous maintenance of nutrition programs have taken advantage of social security funds to add workers to their staffs. Two states that were forced to abandon nutrition programs during the economic doldrums have reinstated the service. Ten states have set up nutrition services in their health departments for the first time. The most recent reports to the Children's Bureau indicated that on September 1, 1937, 15 states were employing a total of 27 nutritionists. In all but one of these the chief nutritionist serves on the staff of the maternal and child health division. In Connecticut the nutritionist heads a division of nutrition and health education. In Massachusetts a supervisor and 7 nutritionists are attached to the maternal and child health division and 2 more nutrition workers, who serve in the division of tuberculosis control, receive technical supervision from the nutrition supervisor. In New York 3 nutritionists serve on the staff of the maternal and child health division and a fourth is assigned by the State Health Department to a project for staff education in a city health department.

The pediatricians or obstetricians who constitute the majority of state directors of maternal and child health have shown interest in and understanding of the contribution of nutritionists to their programs. They have also been quick to realize that nutrition plays a part in other aspects of public health. It is safe to say that no nutritionist has failed to render some service outside the maternal and child health division of the state health department, notably in dental hygiene, public health education, tuberculosis control, and diagnostic clinics for crippled children. When she is assigned to a local health agency, she is, of course, responsible

directly to the local health officer and carries on a general program that includes consulting with the staff and participating in their services to families and individuals.

The question naturally arises why nutritionists have not been employed in all states and territorial possessions that receive federal funds under the maternal and child welfare title of the Social Security Act. The answer is the same as to the question why no two states have submitted identical plans for maternal and child health services. State plans, as formulated by health department officials in consultation with representatives from the Children's Bureau, take into consideration both state needs and state resources. In some states nutrition education in rural areas is already more highly developed than the medical and nursing services given by public health agencies. If a highly organized agricultural extension service and a state department of vocational education are carrying on educational work in nutrition and are reaching the people toward whom the maternal and child health program is also directed, the health department does well to rely upon these resources, at least while it is building up its own organization to the point where it can furnish intelligent guidance to its own nutrition worker and make effective use of her services. Many state plans recognize that nutrition is an integral part of a well rounded program of maternal and child health and make some provision for incorporating effective nutrition teaching in the day-to-day service of the public health nurse and the physician conducting a health conference.

Dr. Morris * has offered convincing evidence from Delaware that a worth while nutrition program can be carried out when two state agencies share in the employment of a well trained nutritionist. Several state health departments that have not been able to appoint a staff nutritionist for the present are using existing resources in the state to help solve outstanding nutritional problems. The serious health situations resulting from the drought of the summer of 1936 led to concerted efforts by health, welfare, and educational agencies in some of the states that suffered most severely. In South Dakota extension service workers, rural rehabilitation home supervisors, home economics teachers, and public health workers have formed a united front in a campaign of education and services to safeguard the health of mothers and children in drought areas. Through the efforts of state workers, nutrition and health councils have been formed in a majority of the counties. Educational material recommended by the state nutrition council as particularly well suited to different teaching situations is being used throughout the state. School lunches are being fostered by community leaders. The belief is widespread that some of the worst consequences of the drought in South Dakota have been averted by the concerted action of the agencies most immediately concerned with food, nutrition, and related health problems.

Although much can be accomplished in promoting good nutrition as a public health measure without drastic change in the personnel of state and local health departments, many state directors of maternal and child health look forward to the eventual appointment of at least one nutritionist as a staff consultant. The regional and special consultants of the Children's Bureau encourage states to appoint one or more nutritionists when the groundwork for a successful program has been laid. Even a single worker in a large state can increase the effectiveness of the

* See Morris, Woodbridge E. Nutrition Program in a State Department of Health. *A.J.P.H.*, June, 1938, p. 718.

nutrition services in the maternal and child health program if sufficient thought is given to the best use of her time and energy.

The activities of the state nutritionists now in service vary considerably in detail, but little in broad general outlines. Perhaps the major responsibility of the staff nutritionist is staff education so that all public health workers who come into direct contact with the public may be in agreement as to fundamentals of nutrition in relation to maternal and child health. The statement is often made that one of the functions of the nutritionist is to keep her public health colleagues informed on what is new in the field of nutrition. Probably a more important function is to keep them informed on what is *still true* in nutrition and on how to teach these generally accepted principles so persuasively and understandingly in terms of everyday food practices that mothers and children form good habits which will withstand the onslaughts of the most uninhibited of food faddists. To aid the effectiveness of nutrition teaching in the home visit, the health conference, the school inspection, the classroom, or the occasional lecture, the nutritionist assembles and evaluates teaching aids, such as bulletins, posters, films, and exhibits. Most workers find it advisable to make full use of all appropriate material from governmental and other reliable sources and to prepare within the state only what is not available elsewhere.

If staff education is the first responsibility of the nutrition consultant, coordination of the nutrition work of allied agencies is a close second. Just as the dental-health consultant interests local dentists in the oral hygiene program of the state department of health, so the nutritionist enlists the interest and support of individuals engaged in educational and service activities related to food and nutrition. The list of people who can contribute to a public health program in a community may be a long one: the county home demonstration agent and 4-H club leader, the county home supervisor for the rural rehabilitation program, teachers of home economics, welfare workers, school administrators and teachers (including nursery school teachers), school lunch administrators, and others. As a state worker, the department of health nutritionist usually makes her first contact with the state leaders in the fields just listed and by so doing often finds that the way has thereby been paved for good working relationships on a county or community basis.

The extent of direct service that a state nutrition staff can give is perforce strictly limited. When the special maternal and child health demonstration in progress in a state either features or includes nutrition work, the nutrition consultant is often able to give some intensive service within that area. If the demonstration area also serves as a center for the field training of new staff nurses, staff education can be carried on under the realistic conditions of a local health unit. When several nutritionists are employed, participation in child health conferences is often possible on a permanent basis, as a means for training nurses or qualified volunteer workers in the technic of the nutrition consultation. Many nutritionists consider that some work in a local health department and some direct contact with mothers and children is indispensable to meaningful consultation service but recognize that the most far-reaching contribution they can make to a county or community program is through developing local resources for continuing participation in the work of the local unit. One or two inoculations may bring lifelong immunity to specific diseases, but the campaign for good nutrition is a never ending fight

against indigence, ignorance, and inertia.

REFERENCES

1. Garry, R. C., and Stiven, D. A Review of Recent Work on Dietary Requirements in Pregnancy and Lactation, with an Attempt to Assess Human Requirements. *Nutrition Abstr. & Rev.*, 5, 4:855 (Apr.), 1936.

2. Howe, P., White, R., and Rabine, M. Retardation of Dental Caries in Out-patients of a Dental Infirmary. *Am. J. Dis. Child.*, 46, Part I; 1045 (Nov.), 1933.

3. Coffin, S. M., and Beinert, F. L. Nutrition on the Well Child Conference. *The Commonhealth*, 23, 1:40–6 (Jan.-Feb.-Mar.), 1936.

4. Gillett, L. H., and Rice, P. B. *Influence of Education on the Food Habits of Some New York City Families.* New York Association for Improving the Condition of the Poor, 1931.

Length of Life

. . . Again it will have been noted that no advice has been given this evening about how to conduct life so to live long. The reason for this omission is simple. I am not a medical man. It is the proper professional business of medical men to instruct and advise people about healthy and continued living. They have done well at it, and their collective wisdom about it waxes day by day. On the other hand, detached observation suggests that when laymen take on the job, as all too many of them love to do, the results have not been quite universally all that could be desired. Some conspicuous examples could be cited by way of illustration of this point, without having to wander very far geographically. The truth is, as every physician knows, that human life and living are extremely complicated matters, not amenable to simplification by formula or to amelioration by panacea. Really helpful advice about unravelling these complications will come only from the wisdom that grows out of experience and knowledge. The purity of heart and nobility of purpose of bustling "do-gooders" or the ready omniscience of gentry eminent in branches of science other than medicine are poor surrogates for the real knowledge and wisdom of the seasoned medical practitioner in the search for longevity.—Pearl Raymond. "Lectures to the Laity," New York Academy of Medicine, February 24, 1938, *Sci. Month.* May, 1938.

Accuracy of the Cancer Death Records*

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THE challenge to statisticians to prove that data upon which extensive biometrical methods are used and from which conclusions are drawn are basically accurate enough to warrant this expenditure of effort or to justify the conclusions drawn, suggested the need for appraisal. This study is concerned with the soundness of the data contained in the cancer death records.

The general use of autopsy for exact verification of doubtful diagnoses does not seem imminent. Only about 12 per cent of the cancer deaths at the present time come to autopsy, and these in no sense represent a cross-section of the cancer population. With the limitation in autopsies, the method employed in this study furnishes a reasonable evaluation of the cancer death records.

The late Robert B. Greenough advised checking the accuracy of the information on the cancer death records by interviewing those who were related to or associated with the deceased. The state-wide interest in the cancer program, in effect in Massachusetts since 1926, with the consequent rational attitude toward the disease as an entity, would presuppose a coöperative attitude toward the study. It was an extensive undertaking, financed in part by the Rockefeller Foundation, and coöperated in enthusiastically in practically every instance by that portion of the population interviewed—approximately 15,000 individuals. Whether, in view of the state cancer program in operation for the past 10 years, the findings in Massachusetts could be applied to other states is problematical.

The death records were first copied on a special card prepared for the purpose. In addition to the name and address of the individual, the death record contains information concerning the cause of death, date of birth and death, nativity, date of first recognizable symptoms, the operative history, the place of death, any associate cause of death, the record of an autopsy if one were performed, and the name of the individual who signed the certificate.

Comparable information was obtained from the family, every physician employed, hospitals attended, and social workers who knew the case.

There were 6,153 deaths from cancer in Massachusetts in 1932. Since several interviews were required for every completed case record, it was necessary to sample the deaths rather than to attempt to obtain information on every single death for the calendar year. It was predetermined that completed records of one-third of the total deaths should be secured. This necessitated at least one visit to the residences of about one-half of the individuals who had died of cancer in Massachusetts in 1932. The family was visited first in every instance. From this source the

* Read before a Joint Session of the Association of State Registration Executives and the Vital Statistics Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 7, 1937.

names of the physicians employed, as well as the hospitals attended, the social workers, and others familiar with the case could usually be obtained. When the family and physicians of one of these cases could not be reached, the case was not followed further. This caused the rejection of approximately 1,000 records after one or more contacts had been made, since records with insufficient data were discarded.

An attempt was made to draw the true picture of the life of the cancer patient from the material thus obtained, and to note differences between this picture and that furnished by the death record itself. While it is realized that in some instances accurate details may not have been obtained, it is believed that in most cases the verified data represent the actual facts.

The sample of cancer deaths surveyed was 32.9 per cent of the total for 1932. That the sample was representative by site of cancer is evidenced by the fact that the distribution in the surveyed population of the several sites studied shows no significant difference by chi-square test from the distribution by site in the total Massachusetts cancer deaths for 1932 (chi-square = 4.9 and n = 8). This shows that this sample is representative of the Massachusetts cancer deaths by site for 1932. The geographical fairness of the sample had been assured by having the surveyors collect a certain number of records from each part of the state.

The verified data were in complete agreement with the death records on the question of sex, as was to be expected. Discrepancies as to age were so slight as to be practically negligible. Only an occasional case differed more than a year from the recorded data. Nativity was correct in over 99 per cent of the records. One may assume that the age, sex, and nativity information furnished by the death record is accurate.

The question of operations was reasonably accurate with agreement occurring in 93.7 per cent of all cases. A reasonable accuracy was present in the associate cause of death with agreement occurring in 92.0 per cent of all cases.

The duration of cancer is the least reliable information on the death record. Agreement between the death records and the facts learned in the survey occurred in only 22.8 per cent of the records. This item of information is frequently entirely omitted from the record, and was missing in 53.7 per cent of the cases studied. When the average duration of these cases in which information was available was compared with the verified duration, the true figure was nearly twice as large as that obtained from the death records—13.6 months on the death records and 23.8 months in the survey. From these facts, it is evident that little reliance can be placed on the importance of duration in cancer as determined by the death records.

The most important item from the standpoint of the student of cancer statistics is the value of the record certified as being cancer. The number of cures prevents cancer mortality from being an index of cancer morbidity. With accurate cancer mortality, accurate duration of disease, and a reasonably accurate estimate of the percentage of cures, morbidity can be approximated from mortality data. A death is either certified as being due to cancer or not. The statistician wishes to know how many of those so certified are correct, and how many of those not so certified should have been classified as cancer.

Another problem which is increasing in importance with improved methods of handling statistical data and with better knowledge of the disease is that of the exact primary location of the cancer. The present-day statistician not only wants to know whether or not the patient died of cancer, but also

TABLE I

Comparison of Actual and Death Record Diagnosis

Location of Cancer	*Official Death Record Diagnosis*	*Verified Diagnosis*		*Complete Agreement*	*Percentage Agreement with Death Record*	*Author's Estimate of Percentage Agreement*
Buccal Cavity	79	74		66	83.5	84.0
Digestive Tract	1,028	792		776	75.5	80.0
Respiratory Tract	64	53		44	....	....
Uterus	213	191		172	80.8	83.0
Other Female Genital Organs	43	57	(89.0%)	33	....	....
Breast	225	246		222	98.7	99.0
Male Genitourinary Organs	169	157		141	83.4	86.0
Skin	28	29		16	....	....
Other and Unspecified Organs	180	209		120	66.7	68.0
Doubtful—Probably Cancer	0	66	(3.2%)	0	....	....
Doubtful—Possibly Cancer	0	75	(3.7%)	0	....	....
Doubtful—Probably Not Cancer	0	47	(2.3%)	0	....	....
Non-Cancer	4	37	(1.8%)	0	....	....
Total	2,033	2,033	(100.0%)	1,590	78.2	83.0

where the primary lesion originated. The data obtained in the death record survey furnish an answer to all these questions with the exception of the size of the group classified as dying of other diseases that should have been classified as cancer. Inasmuch as only cancer deaths were verified, additional data were obtained to determine the volume of this particular group.

Table I shows the official diagnosis compared with the verified diagnosis, subdivided by broad types of location of cancer. Four cancer cases were not recorded in the official cancer classification because other diseases which the individual had were given precedence over cancer. While these individuals had cancer, they were classified as follows:

1. Sudden death under ether anesthesia preparatory to operation for extensive carcinoma of the stomach
2. Hypostatic pneumonia following a fracture of the left femur; associate cause, cancer of the prostate gland
3. Shock following fracture of the right hip; associate cause, cancer of the lung
4. Shock due to pathological fracture of right femur and left humerus; metastatic lesions from cancer of the breast

While these cases are classified as dying of accident, they all had extensive cancers, and from the point of view of cancer epidemiology might well have been classified under cancer.

A group of 66 cases was probably malignant, although conclusive evidence was lacking. In most of these cases the diagnosis had been based on observation of clinical symptoms by one or more physicians and although the physician or physicians had not had the advantages of consultation, they had treated the patient over a considerable length of time and did not base their opinions solely on observations of the patients in a moribund condition.

A second group comprising 75 cases was classified as possibly malignant. A physician might state he believed this case to be malignant from the symptoms, but because the patient refused sufficient examination or study of the case, he was not certain. An example of this type of case was the woman who refused examination and whose family refused to permit examination of the body even after death, when all the symptoms pointed toward cancer of

the uterus. Another type of case included in this group of 75 was of those individuals who, although they went to a hospital, refused other than palliative treatment, and whose hospital records read "question of malignancy." A third type of case was of those individuals to whom a physician was summoned only a week or so before death. His opinion had to be based on a superficial examination of a moribund individual.

Forty-seven cases were viewed in which the evidence was presumptive of non-malignancy, but not sufficiently strong to warrant a positive statement. Several of the physicians signing records in this group made the statement that their diagnosis of cancer was only a guess. In other cases the hospital records stated positively that the case was non-malignant, while the local physician was equally positive that it was malignant.

Thirty-seven additional cases were definitely not cancer. Several of them at autopsy were found to be other conditions, and the death certificates were evidently written before the report of the autopsy findings. Others had been biopsied a short time before death with negative findings for malignancy. In one case in which the patient died of heart disease, the physician had written on the certificate that this patient was operated on for cancer of the bladder several years previous to that time and had had no recurrence. The fact that cancer appeared on the death certificate caused this to be certified as a cancer death rather than heart disease. In all of these 37 cases the evidence collected from the family, physician, hospital, and autopsy records seemed sufficiently strong to make the dogmatic statement that none of these cases was cancer.

This analysis of the presence or absence of cancer disregarding location indicates that the presence of cancer as measured by the death certificate is accurate to somewhere between 89 per cent and 98 per cent. This may be even more closely approximated by the assumption that the probable cancers were cancers, and the probable non-cancers were not cancers. This is a reasonably safe assumption as errors in either of the classifications may well be balanced by the other. This would place the actual figure between 92 per cent and 96 per cent.

An exhaustive analysis of those cases classified as "possible cancer" leads one to believe that approximately three-fourths of the cases were cancer. An estimate that cancer as a disease was accurately diagnosed in 95 per cent of the total cases is felt to be a sound one.

A comparison of the diagnosis of the official death record by broad classification of site of cancer with the verified diagnosis disclosed complete agreement in 78.2 per cent of the total cases. If similar assumptions are made regarding the doubtful cases as were made with total cancer, this figure would be increased to 83 per cent. Frequently, the site of metastasis was given rather than the site of the primary lesion. When these cancers were allocated to the correct site, a decrease was found in the number of cases of cancer of the buccal cavity, of the digestive tract, of the respiratory tract, of the male genito-urinary organs, and of the uterus. An increase was apparent in other female genitals, breast, and cancer of other and unspecified organs. Cancer of the skin was practically the same. From Table I the inference is drawn that site of cancer is not particularly well defined on the death record.

This is even more graphically shown in Table II where the broad classifications are subdivided into smaller units. Complete agreement was present in 70.9 per cent of the total cases. If the same assumption as was made above is repeated, this figure may be as high as

TABLE II

Comparison of Actual and Death Record Diagnosis

Location of Cancer	*Official Death Record Diagnosis*	*Complete Agreement*	*Percentage Agreement with Death Record*	*Author's Estimate of Percentage Agreement*
Lip	7	7	....	....
Tongue	18	11	....	....
Mouth	14	5	....	....
Jaw	17	13	....	....
Other Buccal	20	12	....	....
Pharynx	3	1	....	....
Esophagus	38	33	....	....
Stomach	379	292	77.0	80.0
Intestines	290	211	72.8	75.0
Rectum and Anus	109	78	71.6	75.0
Liver, Biliary, Gall-bladder	126	22	17.5	20.0
Pancreas	57	44	....	....
Peritoneum	2	0	....	....
Other Digestive	27	0	....	....
Larynx	12	7	....	....
Lungs and Pleura	45	32	....	....
Other Respiratory	7	0	....	....
Uterus	213	174	81.7	85.0
Ovarian and Fallopian Tube	39	27	....	....
Vagina and Vulva	4	3	....	....
Breast	225	223	99.1	99.0
Male Kidney	14	11	....	....
Male Bladder	53	30	....	....
Prostate	98	85	86.7	90.0
Testes	1	1	....	....
Scrotum	1	1	....	....
Others of This Class	2	2	....	....
Skin	28	16	....	....
Female Kidney	14	8	....	....
Female Bladder	21	14	....	....
Brain	13	11	....	....
Bones except Jaw	9	8	....	....
Others and Unspecified	123	60	48.8	50.0
Non-Cancer	4	0	....	....
Total	2,033	1,442	70.9	75.0

75 per cent. The greatest discrepancy appeared in cancer of the liver, biliary passages, and gall-bladder where complete agreement occurred in only 17.5 per cent of the cases. Again, repeating the previous assumption, this figure may be as high as 20 per cent. This is due to the practice, which is still common although far less so than previously, of certifying a death record as being cancer of the liver rather than cancer of the original site.

These findings warrant conservatism in any discussion of cancer by location of organs affected in which mortality figures are used, but are much better than one would be led to believe by reviewing some of the literature.

These figures indicate a more accurate record diagnosis than was shown by Lund and Hoffman [1] in their study from 1918 to 1930. They found 31 per cent of mouth cases recorded as dying of cancer outside the buccal cavity. In

this study 16.5 per cent were found. While this sample of buccal cavity cancer is smaller and subject to more statistical fluctuation, the great difference would indicate that certification in 1932 was far better than the sample of Lund and Hoffman with the median year of death 1921. This points toward an improvement.

A compilation from the literature of 6 studies on autopsies in which the data have been reported so that comparison is possible has been combined in Table III with a review of records from the Massachusetts General Hospital of autopsies performed from January, 1928, to July, 1937, inclusive. This table shows the cases that were clinically diagnosed as cancer, those that were erroneously diagnosed as cancer, and the missed cases that were found only at autopsy. The percentage of erroneously diagnosed cancers varied from 2.2 in Lubarsch's study [2] to 12.0 in that of Bilz.[2] The Massachusetts General Hospital figure of 8.4 is in close agreement with 3 of the other studies and is also the median for the series. While attempts are made at the Massachusetts General Hospital to obtain autopsies on as many bodies as possible, the fact that this hospital receives material which is difficult to diagnose clinically from all New England, makes its autopsy series a specialized group. Moreover, the cancers by location differ from a cross-section of cancer deaths, and if adjustments were made for these two items alone the rate for erroneously diagnosed cases would not differ greatly from the estimate made from the survey.

This strengthens the belief that 5 per cent erroneously diagnosed cases is close to the correct figure.

The number of missed cases per 100 erroneously diagnosed cases at the Massachusetts General Hospital was 230. In 2 of the other studies this figure was 244 and 264 respectively. The records of the Massachusetts state-aided cancer clinics show 220 originally diagnosed as non-cancer and later changed to cancer, to every 100 first diagnosed as cancer and later changed to non-cancer. Inasmuch as the Massachusetts state-aided cancer clinic cases are followed from first attendance at clinic to death of the patient and are in close agreement with the majority of the autopsy studies, this figure seems suitable to use in estimating the percentage of missed cases. There would thus be between 9 and 18 per cent

TABLE III

Measurement of the Accuracy of Clinical Diagnosis by Autopsy

	Clinically Diagnosed Cancer	*Erroneously Diagnosed (Clinically Diagnosed Cancer—Found to be Non-cancer at Autopsy)*	*Missed Cases (Clinically Diagnosed Non-cancer—Found to be Cancer at Autopsy)*	*Percentage of Erroneously Diagnosed Cancer*	*Missed Cases per 100 Erroneously Diagnosed Cancer*
Wells [2]	400	33	178	8.2	539
Lubarsch [2]	7,426	163	1,312	2.2	805
Bilz [2]	600	72	60	12.0	83
Ritterhaus [2]	405	13	48	3.2	369
Riechelmann [2]	613	58	156	9.5	264
de Vries [2]	1,102	102	249	9.3	244
Current Study—Massachusetts General Hospital	677	57	131	8.4	230

missed cases, the most probable figure being 11 per cent.

The total error in the number of cancer cases reported would be about 6 per cent (11 per cent missed cases minus the 5 per cent erroneously diagnosed cases). If 6 per cent were added to the number of recorded deaths in Massachusetts, a figure would be obtained which would closely approximate the actual cancer mortality.

The analysis of these data indicates that in Massachusetts identification of cancer deaths is sufficiently accurate to warrant statistical compilations on age, sex, nativity, and the disease as a whole. There is a considerable error in exact location of cancer and a large error in duration of disease, and the statistician should not draw conclusions on these data without making corrections for errors known to exist.

REFERENCES

1. Lund, Charles C., and Hoffman, Virginia. The Accuracy of Death Certificate Diagnoses in Cases of Buccal Carcinoma. *New Eng. J. Med.*, 209, 15:719–722 (Oct. 12), 1933.

2. de Vries, W. M. The Prevalence of Cancer as Revealed by Mortality Returns and at Autopsy. Pp. 217–246 of *Cancer Control Report of an International Symposium held under the Auspices of the American Society for the Control of Cancer, Lake Mohonk, New York, U. S. A., September 20–24, 1926.* Surgical Publishing Co., Chicago, 1927.

Tobacco, Alcohol, and Longevity

. . . The net result is obvious. In this group of nearly 7,000 men the smoking of tobacco was associated definitely with an impairment of life duration, and the amount or degree of this impairment increased as the habitual amount of smoking increased. The contrast between the life tables relative to the implied effects upon longevity of moderate smoking, on the one hand, and the moderate use of alcoholic beverages, on the other hand, is very striking. The moderate smokers in this material are definitely shorter lived than the total abstainers from tobacco; the moderate drinkers are not significantly worse or better off in respect of longevity than the total abstainers from alcohol.

Heavy indulgence in either tobacco or alcohol is associated with a very poor life table, but the life table for heavy smokers is definitely worse than that for heavy drinkers up to about age 60. Thereafter to the end of the life span the heavy smokers do a relatively better job of surviving than the heavy drinkers. But neither group has anything to boast about in the matter of longevity.—The Search for Longevity, by Prof. Raymond Pearl, *Sci. Month.*, May, 1938, p. 480.

Precision Methods in the Determination of the Heavy Metals*

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A CERTAIN amount of the chemical work in industrial hygiene requires only routine procedure of the conventional type—such as the determination of the amount of a given constituent in air samples, the analysis of factory products, or of raw materials, the analysis of rafter dusts or of water samples. Such work requires only ordinary care and average skill to yield perfectly satisfactory results. Furthermore, a routine procedure is usually quite sufficient for the accuracy desired or necessary.

There are phases of investigation in industrial hygiene, however, that require the highest type of chemical skill, yet it appears to be quite generally the case to relegate such work to a routine analyst. It is obvious that an investigation, no matter how ambitiously projected, is no better than the physical data collected, or the analytical figures upon which it is based. A special plea is therefore made, not necessarily for simpler, but for more precise methods and for more careful evaluation of the results obtained. This may entail more work, time, and expense than an investigation would appear to warrant; but it is a question whether such a rapidly increasing field as industrial hygiene would not be better served eventually. A poor job is not only a poor job—it multiplies the later work of others in the same field.

One of the major undertakings yet to be done in industrial hygiene is the question of methods of analysis. In spite of all the work that has been accomplished, this will be true for some time to come. Just as the great advances in biochemistry have been conditioned and fostered by more and more exacting methods of analysis, the ground work and basis of industrial hygiene is that of its analytical data.

In a sense this is uninteresting work. As in analytical chemistry in general, nothing basically new is added in working out a method of analysis. Rather it consists in adaptation of recognized methods to a specific or unique problem. Occasionally a conventional procedure is discarded entirely and a breath-taking short-cut substituted, as shown in analytical spectrography, but even here its validity must be based on recognized procedure of the highest order.

I propose to confine myself to selected phases of analytical procedure, rather than to a detailed discussion of analytical methods. The methods of analysis are constantly changing to meet new or unforeseen conditions, and this shows a healthy and fortunate tendency. There are two directions in

* Read before the Industrial Hygiene Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 5, 1937.

which these changes occur: one in the direction of simplification and rapidity; the other toward greater accuracy. The former meets the pressure of routine output; the latter may need some explanation—but no justification surely. The higher degree of accuracy is needed more in specialized investigations of industrial toxicology. It is with the latter that I propose to deal here and to discuss certain phases of the analytical problems with which we recently have been concerned.

We no longer have the massive exposure to injurious substances that was true only a few years ago in industry. Great improvements have been made in preventive control. Therefore the problems of occupational disease are more difficult because the actual degree of exposure is smaller—smaller amounts of poisonous materials are involved—and the clinical pictures of various intoxications are modified in similar fashion. For instance, lead is still the ranking industrial poison, yet control measures are so good that the degree of exposure of workers in a modern factory is very low and the actual number of cases of typical lead poisoning is steadily diminishing.

With respect to the heavy metals, investigations in industrial hygiene are concerned with quantities that are very small. Unfortunately these very small amounts are concealed in quantities of biological material which are enormously large in proportion. Thus, a significant amount of a metal in a day's output of urine of 1,500 c.c. may be 30 or 40 micrograms. This represents a concentration of 3 or 4 parts in 150,000,000. Furthermore, organic material notoriously interferes with the chemical determination of the heavy metals and must be removed. In the determination of the total arsenic content of a human liver, say, this becomes a very difficult problem. Therefore I would like to discuss two things that betray more than anything else the difficulties of such analytical procedure.

DRY ASHING PROCEDURE

It is well known that one of the most troublesome operations in the determination of the tissue or excreta content of the heavy metals is that of ashing. At the same time, nothing can contribute so much to lack of precision as the process of removal of organic material. In spite of this, however, the amount of attention that has been directed to this problem is out of proportion to its importance. With such metals as arsenic, cadmium, antimony, and mercury, dry ashing is of course out of the question. However, in certain cases dry ashing is exceedingly useful if it can be safely employed, although it requires great care and patience to carry out properly. The extraction of the ash must not only be thorough, but one must not overlook the possibility of the formation of insoluble phosphates or silicates at the temperatures employed. This means that *all* residual material—commonly supposed to be "silica"—must be carefully dissolved and added to the acid extract. Unless this is carefully attended to, the resulting analysis may be tremendously in error.

From time to time the possibility of loss in ashing as a result of using too great a temperature is pointed out. However, very little work has been reported with respect to losses in ashing at various temperatures.

In a recent study made with respect to lead losses in ashing we found that the nature of the compound is of some importance. Owing to the predominance of chlorides in tissues or excreta there is the possibility of formation of lead chloride which is rather volatile compared with other lead salts. Known amounts of lead as chloride were heated in platinum dishes for similar lengths of time in an electric muffle

furnace in which the temperatures could be measured by means of a carefully calibrated pyrometer. The lead could be quantitatively recovered in those cases in which the temperature never exceeded 500° C. At 600° C. losses began to be evident and at 750° C. they were serious, amounting to some 40 per cent. With lead phosphate, however, losses did not begin to occur until a temperature of 750° C. had been reached and even at 850° C. amounted to only a few per cent. These experimental data are shown graphically in Figure I in which the lead recoveries are plotted together with the vapor pressures of lead chloride.[1] In addition to the chloride and phosphate alone, lead carbonate alone, and chopped meat to which lead chloride had been added, were ashed at temperatures intermediate between those in which losses occur with the chloride and phosphate—with no evidence of loss of lead. It is evident, therefore, that so far as lead is concerned, an ashing temperature of 500° C. is perfectly safe.

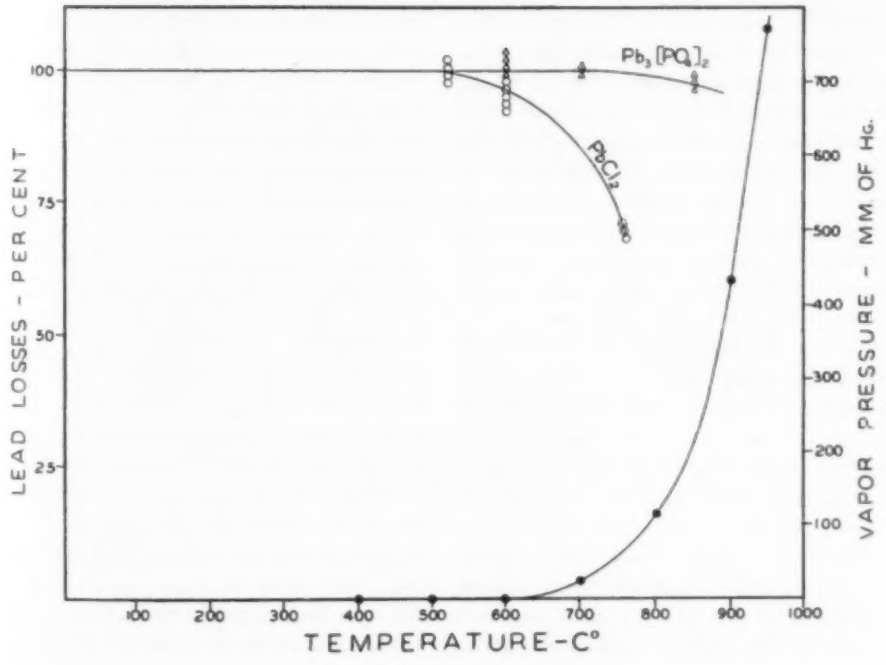
WET ASHING PROCEDURE

While dry ashing is exceedingly useful for several of the heavy metals, it is frequently slow and time consuming and requires more or less constant attention. It is particularly difficult to ash any quantity of blood or liver because these substances tend to form a tarry mass on charring that swells or puffs up into a mass of spongy carbon several times the volume of the original substance. Because of this and because of possible loss with several of the more volatile heavy metals, we have attempted to find a more nearly universal method of ashing that would satisfy exacting requirements.

A study was made of the usual oxidizing materials—nitric, perchloric, permanganic, and sulphuric acids, chlorine, nitrosyl sulphuric acid, and hydrogen peroxide.

There are objectionable features to

FIGURE I

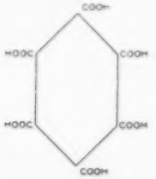


all these. Either it is difficult to purify them to the desired degree, or they are slow and unsatisfactory in action, or difficult to remove, or else demand large amounts of reagent to carry the oxidation to completion. Our choice finally centered on nitric acid. This can be easily purified by distillation, and after some experimentation it was found possible to reduce the nitric acid requirement for complete oxidation to a small figure. Thus, it is possible to oxidize an entire day's output of urine with but 60 c.c. of nitric acid.

Where any increase in temperature above the boiling point is out of the question (and even at 100° C. some loss of mercury apparently occurs when the latter is present as chloride), the problem of complete oxidation is more complicated.

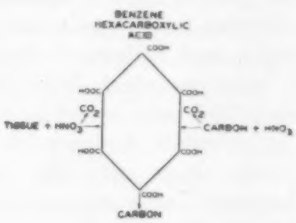
It has been our experience that oxidation with any of these strong oxidizing agents results in the formation of an exceedingly refractory residue. A similar residue has been reported by Kahane in the oxidation of organic material by perchloric acid although Kahane did not identify this substance. On investigation we found that this refractory product, from whatever source of biological material, was an organic substance very soluble in water but insoluble in the usual organic solvents. When further heated it breaks down into a charred mass. It has acid properties and forms a series of insoluble compounds with lead, aluminium, silver, barium, etc.

We have tentatively identified the principal constituent of this end-product as benzene hexacarboxylic acid



It forms fine, silky needles of great stability and is readily soluble in water. Its stability is such that it cannot be chlorinated, nitrated, nor sulphonated. When the temperature is raised it merely chars, or reverts to carbon. Further addition of nitric acid at this point causes this carbonaceous residue to redissolve and form a colorless solution again.

It is of interest that benzene hexacarboxylic acid may also be prepared by merely heating graphite, or charcoal, with nitric acid or other oxidizing agents. Therefore, the scheme of oxidation of biological material may be represented thus:



In studying the intermediate formation of the benzene polybasic acid, large quantities of meat (5 to 10 lb. in each lot) were oxidized with nitric acid until the characteristic long, crystalline needles formed on cooling. The corresponding lead or aluminium salt was then prepared and from this the acid again separated and purified.

Owing to the great stability of this compound, it is useless to attempt further oxidation except by the addition of sulphuric acid, which carries the reaction forward chiefly by raising the temperature. Sulphuric acid is objectionable, owing to the quantity required and to the difficulty of purifying it.

Fortunately the conversion of carbon to benzene hexacarboxylic acid is not quantitative but is attended with some loss. Therefore, in the ashing of biological material, repeated evaporation to a small bulk in order to break down the polybasic acid and re-treatment with small amounts of nitric acid only is

necessary to yield a satisfactory white ash.

THE DIPHENYLTHIOCARBAZONE METHOD FOR LEAD

The precise evaluation of certain of the metals, notably lead, has benefitted greatly within the past few years by the colorimetric diphenylthiocarbazone (dithizone) method of Fischer [3] which is extremely sensitive. Useful as it is, it is not specific for lead unfortunately, as a number of other metals give practically identical colors. One must realize, therefore, that in determining lead in a given substance the appearance of the usual cherry color is not necessarily indicative of lead even after the addition of cyanide, and must take account of the possibility of the presence of other metals giving similar colors. Care should be used with respect to the quantity of cyanide used, as it tends to diminish the apparent amount of lead present.

In spite of these difficulties—which are not at all insurmountable—the diphenylthiocarbazone method is extremely valuable for the determination of lead in a great many cases. It is particularly useful for the determination of lead in spray residue on fruit and as developed by Clifford and Wichmann [4] seems ideal for that purpose. Here the ratio of lead to other metals, or to the total amount of ash itself, is relatively great compared with similar ratios in tissues or excreta.

It would appear that where the diphenylthiocarbazone method has been applied to the examination of excreta for lead, insufficient account has been taken of the other metal constituents. Zinc and tin are normally excreted in far greater amount than lead and unless careful account is taken of the tin in particular, this may well be accounted as lead. Furthermore, Vinson [5] has recently reported that zinc in the presence of cyanide is definitely an interfering substance in the determination of lead by the diphenylthiocarbazone method.

When it is recalled that the urinary excretion of zinc is in the neighborhood of 1 milligram per day and that of tin at least as much, the determination of a few micrograms of lead in the presence of these substances in urine is obviously a more difficult problem than the determination of relatively much greater amounts of lead in simpler material.

APPLICATION OF SPECTROGRAPHIC METHODS

Recent years have witnessed a pronounced popularization of the spectrograph for analytical purposes and its immense advantages in metallurgical work perhaps more than anything else have drawn many to employ it for determination of the metals in biological materials.

At present no single method apparently is so full of promise for the analytical evaluation of traces of the heavy metals as the spectrographic. Its extreme sensitivity and the ease with which material may be examined, as well as the minute amounts of material needed for examination, are all most attractive features, and it is not surprising therefore that it has been so widely heralded.

It is unfortunate for its use in this field that some accounts of its application to the determination of traces of metals in biological material have been so enthusiastic. In reality there are formidable difficulties that stand in the way of its use for the precise evaluation of these traces of metals in tissues and excreta.

Familiarity with spectrographic procedure leads one to feel that there is no question that careful search for and comprehension of these difficulties of analytical application will lead to their elimination and yield a precise method of the greatest utility. However, the

rapid advance in the use of the spectrograph for the quantitative determination of metals in biological substances has been in the direction of extending its application, rather than in the narrower (and more uninteresting) field of tracing its difficulties of application.

The mechanical difficulties of quantitative spectrography — whether with reference to the production of the spectrogram, or to the measurement of line intensity—can obviously be met and satisfactorily eliminated as a result of care and experience. The difficulties to which I particularly refer are those of quantitative interpretation and the latter are not so dependent upon measurement of line intensity, whether by the "internal standard" method or by its photometric refinement, the rotating logarithmic sector method, as upon conditions prevailing within the arc and upon other substances present with the metal sought. While the latter condition is of no great significance so far as qualitative spectrography is concerned, it is very important in its quantitative application. The line intensity for a given arc and exposure is not constant during the whole time of arcing, but depends upon the relative rate of distillation of its constituents. Thus, the time required for the line spectra of an element to appear and the length of time it will remain after starting the arc depend upon how quickly it volatilizes. Bauer [6] found in the determination of lanthanum in the presence of large amounts of calcium that the lanthanum spectrum reached its full intensity at the end of 2 minutes after most of the calcium had already volatilized.

Aside from quantitative variation in the spectrum with time, it is very important to know exactly what part of the arc is focused upon. Mannkopff and Peters [7] found that such elements as lead, silicon, bismuth, tin, and others show a line intensity in the cathode layer frequently as much as 100 times that in the gas column of the arc. Certain lines may be very intense near the cathode and yet vanish completely in the arc column.

It is particularly important with respect to biological material to recall that the type of lines emitted and their intensities are affected by the presence of an easily ionizable substance, such as sodium chloride, in the arc.

This makes more or less imperative the use of a medium similar in composition to that of the substance under test, but of course spectrographically free from traces of the metal being evaluated—not at all an easy task.

Webb [8, 9] and also Willey [10] have pointed out that in the graphite electrode impurities, the strongest lines of which can only be faintly discerned in the "blank" spectrum, may leap into prominence as soon as *any* mixture that approximately resembles a tissue ash is introduced into the arc. King [11] pointed out that the presence of easily ionizable substances influence the apparent line intensity—notably in the case of calcium. Papish and O'Leary [12] have found that the least recognizable quantity of chromium when introduced into the arc as chromic acid was 0.001 mg., but the same element in fused alumina produced a spectrum much more intense and was recognizable to the extent of 0.00006 mg. Our work with the spectrographic determination of urinary lead so far has been in the direction of tracing such spectral vagaries. With all the sodium, potassium, calcium, and magnesium present in urine ash it is not surprising that more lead is apparently found than actually exists. Papish [13] has coined the term "pulsion" to designate the variation in intensity of spectral lines as conditioned by ionization phenomena.

These facts lead Webb (*loc. cit.*) to state that the tissue distribution of

certain elements found by workers who employed carbon or graphite electrodes must be treated with reserve.

It does not seem that these problems are at all beyond solution. On the contrary, it would appear that, while further careful study of electrode conditions is necessary, quantitative spectrography with respect to the heavy metals in biological material can become more definitely a precision method.

In thus reviewing certain phases of analytical procedure which need further careful investigation, I have not wished to magnify the difficulties of approach, nor to minimize what has been accomplished so far. One cannot but feel confident however that the advances made in industrial hygiene will justify all the care and attention that is devoted to insure precision of measurement.

REFERENCES

1. Eastman, E. D., and Duschak, L. H. The Vapor Pressure of Lead Chloride. Bureau of Mines, *Tech. Paper 225*, 1919.

2. Kahane, E. Destruction de quantites importantes de matieres organiques au moyen de l'acide perchlorique. *Bull. Soc. chim. biol.*, 14:294, 1932.

3. Fischer, Hellmut. Die Metalverbindungen des Diphenylthiocarbazons und ihre Verwendbarkeit für die chemische Analyse. *Wiss. Veröffenti. a.d. Siemens*—Konzern, 4:158–170, 1925.

4. Clifford, P. A., and Wichmann, H. J. Dithizone Methods for the Determination of Lead. *J. Assoc. Off. Agri. Chem.*, Feb., 1936.

5. Vinson, C. G. Spray Residue Work in Missouri. Missouri Agri. Exper. Sta., *Bull. 382*, 1937, 15 pp.

6. Bauer, Herbert. Quantitative Spektralanalyse schwer verdampfbarer Stoffe im Lichtbogen untersucht am Lanthanoxyd. *Ztschr. Anorg. Chem.*, 221: 209, 1935.

7. Mannkopff, R., and Peters, C. Uber quantitative Spektralanalyse mit Hilft der negativen Glimmschicht im Lichtbogen. *Ztschr. f. Physik*, 70:444, 1931.

8. Webb, David A. Latent Impurities in Electrodes Used for Spectrographic Research. *Nature*, 139:248, 1937.

9. Webb, D. A., and Fearon, W. R. Studies on the Ultimate Composition of Biological Material. I. Aims, Scope and Methods. *Sci. Proc., Roy Dublin Soc.*, 21:487, 1937.

10. Willey, E. J. B. Sources of Inaccuracies in Spectrographic Research. *Nature*, 139:758, 1937.

11. King, A. S. Electric Furnace Experiments Involving Ionization Phenomena. *Astrophysical J.*, 55:380, 1922.

12. Papish, J., and O'Leary, W. J. Arc Spectrographic Estimation of Chromium in Ruby. *J. Indust. & Eng. Chem.*, Anal. Ed., 3:11, 1931.

13. O'Leary, W. J., and Papish, J. Analytical Reactions of Rubidium and Caesium. *J. Indust. & Eng. Chem.* Anal. Ed., 6:107, 1934.

Formate Ricinoleate and Brilliant Green Bile Broths to Detect Coliform Organisms in Pasteurized Milk*

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THE results of most recent studies reported (Swenarton, 1927; McCrady and Langevin, 1932; Stark and Patterson, 1936; and others) indicate that although members of the coliform group of bacteria may occasionally resist the heat treatment employed in the pasteurization of milk, organisms of this group which can survive the pasteurization process are seldom observed. Exhaustive studies made by the New York State Department of Health, as well as those made by other workers, have indicated that coliform organisms were present in approximately 1 per cent of pasteurized milks known to contain these bacteria previous to the heat treatment.

Although bacteria belonging to this group are occasionally found to be able to resist the heat treatment of the pasteurizing process, their presence in pasteurized milk is usually interpreted to indicate recontamination. One of the principal reasons for testing pasteurized milk for the presence of coliform bacteria is the ease with which the test can be made. Although it is well known that bacteria belonging to the Escherichia-Aerobacter group are not, as a rule, disease producers and that their presence in milk does not have the same sanitary or public health significance as does their presence in drinking water for human consumption, the seriousness of permitting pasteurized milk to become recontaminated with any kind of bacteria is readily recognized.

At present either the amylase or phosphatase test is employed to ascertain whether milk has been properly pasteurized, and tests to determine the presence or absence of coliform organisms are used to guard against the recontamination of properly pasteurized milk.

The significance of the presence of small numbers of coliform organisms in raw milk is unknown. All who have tested the various media which have been suggested for use on milk readily recognize that these media do not give as satisfactory results on raw milk as they give on pasteurized milk. Because of this, and since we have no accepted standards for the significance of coliform organisms in raw milk, workers making comparative media studies would do well to use pasteurized milks.

No perfect medium has been or probably will ever be found. It has been shown (Stark and Curtis, 1936) that brilliant green 2 per cent bile

* Read before the Laboratory Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 8, 1937.

TABLE I

Formate-Ricinoleate Broth as a Presumptive Test Medium for the Detection of Escherichia-Aerobacter Organisms in Pasteurized Milk

Series	Date of Test	No. of Samples Tested	No. Positive	No. Confirmed	Per cent of Samples Positive	Per cent of Samples Confirmed	Per cent of Positives Confirmed
I	4/24/36	229	35	34	15.3	14.9	97.0
II	7/23/36	221	69	68	31.2	30.8	98.5
IV	4/ 1/37	205	43	42	21.0	20.5	97.6
Total or Average		655	147	144	22.4	22.0	98.0

broth will permit gas production by certain spore-producing bacteria not known to have sanitary or public health significance in pasteurized milk. How frequently these false test organisms will be encountered in pasteurized milk is not definitely known. Some have criticised the toxicity of formate ricinoleate broth. Bacteria capable of causing false tests in this medium may be found.

Using formate ricinoleate broth as the test medium for the detection of coliform organisms in 655 samples of pasteurized milk, 147 were found to be positive (Table I); only 3 samples, about 2 per cent of the positives, failed to confirm. In this study special effort was exerted to confirm all samples giving positive presumptive results. Before criticising too severely any medium for failure to confirm, one must recognize that failure to confirm does not necessarily prove the positive presumptive test to be false. The isolation of bacteria capable of producing the false test is strong evidence. In this study formate ricinoleate broth confirmed in 98 per cent of the cases; in the other 2 per cent (3 samples), slow lactose fermenting coliform organisms were found in 2, and in the other sample non-lactose fermenting bacteria, which might belong to the Salmonella group, or might be Escherichia organisms which had lost their ability to ferment lactose. The detection of weak lactose fermenting strains should be an advantage rather than a drawback for this medium. It is believed by us that pasteurized milk containing Salmonella organisms should be considered unfit for consumption and that a medium which detects these bacteria comes one step nearer to the ideal medium. From these data it is concluded that the presence of organisms in pasteurized milk which are able to cause false presumptive tests in formate-ricinoleate broth are rare. It is realized, however, that false presumptive tests might at times be encountered.

In a comparative study of 221 samples of pasteurized milk (Table II), brilliant green 2 per cent bile broth gave a slightly greater number of positive

TABLE II

Comparison of Presumptive Test Media for Detection of Escherichia-Aerobacter Organisms in Pasteurized Milk

221 Samples Tested 7/23/36

Media	No. of Samples Positive	No. of Samples Confirmed	Per cent of Samples Positive	Per cent of Samples Confirmed	Per cent of Positives Confirmed
Brilliant Green 2 per cent Bile	76	73	34.4	33.0	96.0
Formate-Ricinoleate	69	68	31.2	30.8	98.5

presumptive tests than did formate ricinoleate broth, but the brilliant green bile broth gave a slightly lower percentage confirmation; in certain instances the gas in the positive presumptive tubes was shown to have been produced by anaerobic spore-producing rods.

SUMMARY

Formate ricinoleate broth has been used to determine the presence of coliform organisms in 655 samples of pasteurized milk. Ninety-eight per cent of the positive presumptive tests confirmed; in the other 2 per cent, 3 samples, slow lactose fermenting or related organisms were found.

In comparative tests on 221 samples of pasteurized milk formate ricinoleate and brilliant green 2 per cent bile broth gave approximately the same number of positive presumptive tests. Brilliant green gave a slightly higher yield of positive presumptives, but some of these were shown to be due to anaerobic spore-producing rods.

REFERENCES

McCrady, M. H., and Langevin, E. M. The *Coli-Aerogenes* Determination in Pasteurization Control. *J. Dairy Sci.*, 15:321–329, 1932.

Stark, C. N., and Curtis, L. R. Evaluation of Certain Media for the Detection of Colon Organisms in Milk. *A.J.P.H.*, 26, 4:354–356, 1936.

Stark, C. N., and Patterson, M. C. The Heat Resistance of Colon Organisms in Milk. Abstr., *J. Dairy Sci.*, 19:495, 1936.

Swenarton, J. C. Can *B. coli* be Used as Index of Proper Pasteurization of Milk? *J. Bact.*, 13: 419–429, 1927.

New Jersey Health Legislation

WE are indebted to *Health Progress*, the publication of the New Jersey Health and Sanitary Association, for the following summary of important developments in public health legislation in New Jersey:

A marriage bill, which was drafted by the venereal disease committee of the Health and Sanitary Association and sponsored by the State Department of Health, provides that, beginning July 1, 1938, each applicant for a marriage license in New Jersey must present a certificate from a qualified physician stating that a standard laboratory blood test for syphilis has been made and that, in the opinion of the physician, the person either is not infected with syphilis or is not in a stage of that disease which may become communicable.

Another law, effective January 1, 1939, requires physicians to take blood samples for syphilis tests from all expectant mothers at the time of the first examination. Midwives and others are not allowed to take such samples but must call in a physician for the purpose. All birth certificates must include a statement as to whether or not the blood test was made and the date.

Another provision, which is now in effect, provides $25,000 for the purchase and distribution of pneumonia serum by the State Department of Health.

A fourth provision allows local boards of health to pool their finances for the purpose of lifting the levels of their work and permitting small communities which cannot afford full-time service to employ qualified personnel.

Politics in the Selection of Health Department Personnel

Is There a Remedy?*

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BEFORE the question assigned to me can be discussed intelligently, we must know exactly what we are discussing. The use of the word "politics" is bothersome and, unless we determine its exact meaning and application for this discussion, our suggestions may be misinterpreted and therefore misleading. If we define politics as the science of government, which is one dictionary definition, there can be no objection to its use in the selection of health department personnel. If, however, we consider politics as the subservience of the interests of a political party or of interests other than public, which is the most prevalent interpretation, then we have a problem which demands our most serious thought.

Pernicious politics, no matter by whom used, can degrade the personnel of any municipal department. We must not forget, however, that we have several kinds of politics, all of which are equally harmful to efficient public service. Most of us think only of partisan politics, because we hear more about party activities than those of other groups. In addition we have, for example, personal politics, fraternal politics, racial politics, religious politics, and the politics of professions. Political parties are not the only ones which "play" politics in its reprehensible sense. We have civic organizations, cliques, and professional bodies which do not hesitate to place their selfish interests above those of the public. We have school politics, labor politics, bank politics, insurance politics, and even health politics.

In order that there may be no misunderstanding, I shall assume that the question under discussion is this: What can be done, if anything, to prevent any interests other than public interfering in the selection and retention of efficient health department personnel?

First, qualification for persons eligible for health department service should be prescribed, either by state law or by a state body. Experience in New York State has demonstrated that it is preferable to establish qualifications by a state body. It is exceedingly difficult, if not almost impossible, to prescribe by law satisfactory qualifications which meet all conditions over a period of time. For several years the Public Health Council of New York State has had authority to prescribe by regulation

* Read before the Health Officers Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 8, 1937.

the qualification for local health officers or commissioners and public health nurses. A law was enacted at the last session of the Legislature giving to the Council power also to determine the qualifications for dairy and milk inspectors, operators of public sewage treatment plants and public water treatment and purification plants. If such a state body performs its duties efficiently and does not use its power to create a monopoly in the health field or to favor individuals or groups, and the state department uniformly and rigidly enforces the regulations, this state activity will guarantee a minimum of knowledge and experience which every appointee must have. Political or other interests cannot break through this barrier. The success of this plan depends upon the reasonableness of the regulations and their impartial enforcement. With such a plan in effect the number of applicants is reduced to those who have the knowledge and experience to perform their duties properly. Under it no political or other interest can demand, for instance, that a bartender out of a job be appointed milk inspector or the operator of a sewage disposal plant.

But this alone is not enough. Proficiency among those who are able to meet the prescribed qualifications is not uniform. Therefore, if we are seeking the best, we must put into operation some plan which will make it possible for the appointing officer to select the most proficient of those qualified. No better plan for doing this has yet been devised than civil service. I know the drawbacks and weak points of civil service, but I am convinced that these can be eliminated by proper laws and good administration. If local civil service commissions are effectively supervised and aided by an efficient state commission, and if the local body coöperates with the appointing officer in an effort to make available by appointment only the best qualified persons, then the opportunity for favoritism and the establishment of mediocre eligible lists are reduced to a minimum.

Much of the criticism of local civil service commissions can be eliminated by the adoption of two comparatively simple plans.

First, the prevalent inability of local commissions to prepare proper examinations for technical positions, such as those in health departments, and to rate papers properly can be remedied by the establishment in the State Civil Service Department of a municipal advisory bureau. The staff of such a bureau could have available technical experts to assist local commissions in preparing proper examinations, and both the staff and experts could aid in rating the papers.

Second, local commissions should assist the local appointing officer in every way possible in obtaining the services of the kind of person he feels he needs to fill the position. This can be done by the local commission conferring with the appointing official when a request is made for the establishment of an eligible list, and learning what qualifications are essential for the job. In performing this duty the local commission should be careful to impress upon the appointing official that it does not want to know what person he desires to fill the position, but what kind of a person is necessary.

The efficient administration of a proper civil service law not only will help health departments to obtain good officials, but also to retain them. A proper statute impartially administered insures tenure of office during good behavior and satisfactory service. However, legislators are being constantly importuned by various groups of civil service employees to build a bomb proof wall around them so that it is almost impossible to remove them

except for some very grave offense. As a result, dry rot enters into the service and the incentive for meritorious service is destroyed. Health department heads must join with other administrative officials in constantly and vigorously opposing such legislation.

The third suggestion I have to offer relates entirely to the retention of an efficient health department personnel. This is just as important as the selection. A department which can retain an efficient personnel will have fewer selections to make. A health officer, food inspector, water superintendent, or any other official in a health department may have all of the preëntry qualifications prescribed. He may also be the best equipped by knowledge and experience as shown by his civil service rating. However, as he continues in the service, he is liable to retrogress or become infested with the termites of indifference unless he keeps abreast of the times by constant study. Experience has demonstrated that in-service and extension training services are the most effective ways to keep officials alert, progressive, and skillful.

A study and observation of municipal administration in New York State revealed a few years ago that the goal of perfection sought was not being approached as rapidly as the public demanded and the officials desired. It was found that municipal servants were not uniformly proficient, and that practically nothing had been done to help the new official know his job. Experience alone had been teaching the official the daily routine of public service, and although experience was a competent and exacting teacher, it was also slow and expensive. The problem was solved by the gradual establishment by the New York State Conference of Mayors and Other Municipal Officials of training schools for officials in service. Following the successful demonstration between 1928 and 1935, the University of the State of New York granted to the officers of the Conference of Mayors a charter incorporating the Municipal Training Institute of New York State as an educational institution to operate the municipal training schools. We now have in New York State the equivalent of a municipal university offering 20 courses of practical and systematic instruction in municipal government to 15,000 employees. We have to date operated more than 300 training schools which have been attended by more than 47,000 municipal officials. Among these schools are one for each of the following groups of health officials: milk and dairy inspectors, water superintendents and plant operators, sewage disposal plant operators, and food inspectors.

To supplement the training the officials receive in these training schools, we are now developing in New York State an extension training course for each group. The foundation of this course is a monthly information bulletin. The material for these bulletins is supplied by the local departments and consists of articles describing any new plans or changes in plans, or policies, new developments in work, changes in organization or financing work and new problems, ideas and theories. In effect, the staffs of all the departments in the state have a monthly round table by correspondence at which they present and discuss their work and developments during the previous month. The schools teach the attending official the fundamentals of his job; the extension courses keep him informed of new developments in his work between school sessions.

These schools and extension courses have reduced the costly apprenticeship period of public officials, decreased municipal administration expenses, and are lessening public dissatisfaction with municipal services. They have raised the standard of municipal service,

lengthened the tenure of office, reduced personnel turnover, increased the efficiency of officials and employees, and are gradually convincing the public, including the various interests mentioned in the beginning, that municipal service is not just a political job, but a technical and highly specialized work.

A program of qualification, examination, and training is in my opinion the best so far devised to prevent political or other interests than public interfering in the selection and retention of efficient health department personnel. It is not spectacular, but it is practical. The program as a whole is unusual. I know of no state or municipality which has in operation all of the recommendations. Several governmental units have adopted one or two of the suggestions and have demonstrated their practicability and value. Few of these, however, can boast of such efficient administration as is necessary to produce desired results.

The program carries with it no guarantee of perfection. It provides the machinery by the operation of which the results sought may be obtained. The more proficiently the machine is operated, the better and more permanent will be the personnel.

Whooping Cough Most Intractable of Childhood Diseases

AT the beginning of the Twentieth Century every one of the 4 principal communicable diseases of childhood (measles, scarlet fever, whooping cough, and diphtheria) was an important cause of death, whereas, at the present time, each is a minor cause. Diphtheria, in the 5 year period 1900–1904, so far outranked the 3 others that it caused more deaths than did all 3 combined. With a death rate in excess of 40 per 100,000 population, in the year 1900, this disease just escaped inclusion among the 10 leading causes of death in the country.*

With the passing of more than one-third of the century, however, the picture has changed. Not only have the death rates from these diseases been materially reduced, but there has also been a change in their relative rank. Whooping cough is now the leader and takes a toll of 3 lives to every 2 charged to diphtheria.

The following table shows the death rates from each of these diseases for the 5 year periods 1931 to 1935 and 1900 to 1904.

Average Death Rates per 100,000 for the Principal Communicable Diseases of Children Original Registration States 1931–1935 and 1900–1904

Cause of Death	*1931 to 1935*	*1900 to 1904*
Measles	2.0	10.0
Scarlet fever	2.1	11.8
Whooping cough	2.9	10.7
Diphtheria	2.0	32.8

—*Stat. Bull.*, Metropolitan Life Insurance Company, Apr., 1938.

* In an area consisting of 10 states and the District of Columbia. Reliable data on the mortality from individual causes of death are not available for the rest of the United States for the year 1900.

A Sanitary Study of Commercial Laundry Practices*

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WE have applied our knowledge of sanitary sciences to restricting the distribution of bacteria in water, milk, and food. The present paper is a report of a year's study of the sanitary practices in 54 laundries. The purpose of the study was to ascertain the usual practice and then to develop methods of procedures to overcome the sanitary errors, if such existed.

The washing formula can be subdivided into two large groups, one using a high temperature for white clothes and fabrics, the other requiring a low temperature formula to preserve the color of textiles which would be altered by high temperature. Any washing formula must prevent loss of tensile strength, and the whiteness retention must be preserved. Fabrics must not lose more than 10 per cent of their tensile strength after 20 complete washings, and the whiteness retention tests cannot show more than 6 per cent loss. The formula studied by us conformed to these tests. We were concerned only with the bacterial counts of the wash waters and the textiles in the laundry process.

A family's weekly laundry bundle is subdivided into approximately 16 classifications. Each classification receives a different treatment. Space does not allow us to go farther into this aspect of the washing technic, but for the purposes of this report we shall for convenience and simplicity consider but 2 of these formulae: the high temperature white clothes and the low temperature colored clothes formulae.

Tables I and II give the high and low temperature washing formulae. The flush is the wetting process and consists of the addition of water. This is followed by 4 suds. The washing apparatus is drained after each operation. The 4 rinsing processes are to remove the detergents used in the washing process. The last or sour rinse is to remove the residual soaps which may be retained in the clothes. The whole procedure consists of 4 detergency operations for cleansing the clothes and a similar number of rinsing operations to remove the detergent.

Tables I and II also give the purpose of each operation, the holding time, temperature, and the average bacterial count per c.c. of the wash water. The bacterial count is based upon a year's study of 2 laundries, each was tested twice weekly throughout the year.

The high temperature washing proc-

* Read before the Laboratory Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 6, 1937.

TABLE I

High Temperature Washing Formula

White Clothes

Operation	*Purpose*	*Temperature Degrees Fahrenheit*	*Holding Time Minutes*	*Average Bacterial Count per c.c. Wash Water (1 Year—120 Experiments)*
Flush	Wets cloth (removes surface soil)	110	5	200,428
1 Sud	Detergent—(soap-alkali)	125	10	94,314
2 Sud	" " "	135	10	42,518
3 Sud	" " "	140	10	8,382
4 Sud	" " " plus 1% Bleach	165–170	15	5
1 Rinse	Removes detergent	165	3	1
2 Rinse	" "	165	3	0.5
3 Rinse	" "	165	3	0.4
4 Rinse	" "	165	3	0.2
After Sour	Removes residue detergent	140 }	10	Sterile
Blue		110 }		

ess does not present many sanitary problems. A temperature of 165° to 175° F. with a chlorine (bleach) concentration of 0.01 per cent in the fourth suds, held for 15 minutes is an effective germicidal process. This temperature prevents accumulation of bacteria inside the washing apparatus. Any deposit of insoluble material does not contain living bacteria. Approximately 75 to 80 per cent of the total wash in laundries is processed by this high temperature method.

The low temperature washing formula presents some interesting sanitary problems. The preservation of the fabrics, silks, woolens, and the colors necessitates a low temperature washing procedure, too low to be of significance as a bactericidal procedure. Dilution by repeated washing and rinsing is the principal mechanism of removal of bacteria from the clothes. The last operation used by laundries consists of the addition of some sour or weak acid to remove the residual detergent and brighten the colors of the clothes. We have found that this operation can be used as a bactericidal process. If the sour used brings the hydrogen-ion concentration down to pH 3.8 to 4.2 and is held for 5 minutes, there is a reduction of the bacterial count. We have therefore utilized this common

TABLE II

Low Temperature Washing Formulae

Light Colored Clothes

Light Colored Clothes—Finished Service

Dark Colored Clothes

Operation	*Purpose*	*Temperature Degrees Fahrenheit*	*Holding Time Minutes*	*Average Bacterial Count per c.c. Wash Water (1 Year—120 Experiments)*
Flush	Wets cloth (removes surface soil)	90–100	5	3,674,055
1 Sud	Detergent (soap-alkali)	100	10	1,979,862
2 Sud	" " "	100	10	1,248,758
3 Sud	" " "	100	10	255,579
4 Sud	" " "	100	10	221,293
1 Rinse	Removes detergent	100	3	88,966
2 Rinse	" "	100	3	67,461
3 Rinse	" "	100	3	43,809
4 Rinse	" "	100	3	35,278
5 Rinse	" "	100	3	24,441
After Sour	Removes residue detergent—brightens colors	95	5	158

procedure and adapted it so as to make a germicidal agent. This requires a carefully controlled operation; the colorimetric determination of the hydrogen-ion concentration must be carried out on each load of clothes washed.

The following sours have been studied:

Sodium Acid Fluoride
Sodium Silico Fluoride
Ammonium Acid Fluoride
Ammonium Silico Fluoride
Acetic Acid

Table III gives the average amount of each sour to be added per lb. of clothes in order to obtain the required hydrogen-ion concentration. The buffered sours are safer and more satisfactory. The organic acids can be added in excess and will then reduce the tensile strength of the textiles in the wash.

TABLE III

One and One-half Grams of Each of the Following Sours Were Added per lb. of Clothes—Hydrogen-ion Concentration and Bacterial Count Determined at 5 Minutes' Holding Time

	pH	*Bacteria per c.c.*
Sodium Acid Fluoride	4.3	40
Sodium Silico Fluoride	4.4	127
Ammonium Acid Fluoride	4.2	12
Ammonium Silico Fluoride	4.4	101
Acetic Acid	5.0	280

teria. Space does not permit a detailed discussion of methods of determining the degree of bacterial seeding of cylinders. Table IV gives the average number of bacteria cultured from wooden cylinders per sq. in. of surface before and after cleaning from 6 laundries. Table V gives a method of cleaning cylinders which we have found to be very effective and practical. Sodium silico fluoride dissociates at high temperature and acts as a solvent for the calcium soap residues as well as a germicidal agent. Twenty minutes holding time at 190° to 195° F. in the presence of this acidity destroys the bacterial flora in deposits. Rinsing at high temperature, followed by the use of caustic soda to neutralize the acids in the wooden cylinders, followed again by hot rinses, leads to a clean cylinder with a very low bacterial count on its surface.

TABLE IV

Examples of Average Bacterial Count per Square Inch of Surface of Dirty and Clean Cylinders

Laundry	*Before Cleaning*	*After Cleaning*
A	529,740	18
B	2,910,600	25
C	3,559,500	41
D	3,100,750	4
E	2,153,000	36
F	612,550	11

TABLE V

A Method for Cleaning Wooden Cylinders in Laundries

Procedure	*Purpose*	*Time Minutes*	*Temperature Degrees Fahrenheit*
2 lb. Sodium Silico Fluoride	Acid to dissolve insoluble soap residue and kill bacteria	20	190–195
Hot Rinse	Remove residual acid and destroy bacteria	5	170
Hot Rinse	Remove residual acid and destroy bacteria	5	170
2 lb. NaOH	Neutralize acidity and remove residue	20	190–195
Hot Rinse	Kill remaining bacteria and remove residual chemicals	5	170
Hot Rinse	Kill remaining bacteria and remove residual chemicals	5	170

The low temperature washing formula allows insoluble residues to be built up on the inside of the machines. The cylinders become coated with insoluble calcium soaps and other materials which harbor many living bac-

Table VI gives the results of bacterial counts of the last souring rinse from 3 laundries using the same washing formula before and after the cylinders were cleaned. Table VII records an average low temperature

TABLE VI

Bacterial Count per c.c. of Rinse Water Before and After Cleaning of Wooden Wash Cylinder

	After Sour Rinse	
Laundry	*Before Cleaning*	*After Cleaning*
A	160	35
B	2,080	23
C	13,860	40

dirty cylinder wash. It is self evident that bacteria are being added from some source to the wash waters. The 4th and 5th rinse waters contain more than twice the number of bacteria that were present in the 3rd rinsing operation. The souring process was not effective because of the inexhaustible bacterial reservoir on the surface of

TABLE VII

Influence of Clean Cylinders upon the Sanitary Efficiency of Low Temperature Washing Formula

Bacterial Count per sq. in. of Cylinder Before Cleaning	*Bacterial Count of Wash Water per c.c. Before Cleaning*		*Bacterial Count per sq. in. of Cylinder After Cleaning*	*Bacterial Count of Wash Water per c.c. After Cleaning*	
2,910,600	Flush	378,000	25	Flush	300,590
	1 Sud	262,080		1 Sud	252,000
	2 Sud	270,900		2 Sud	49,330
	3 Sud	126,000		3 Sud	47,500
	4 Sud	136,000		4 Sud	45,100
	1 Rinse	133,100		1 Rinse	43,100
	2 Rinse	14,490		2 Rinse	13,600
	3 Rinse	11,530		3 Rinse	9,900
	4 Rinse	26,200		4 Rinse	4,820
	5 Rinse	24,300		5 Rinse	4,410
	After Sour	2,080		After Sour	23

washing process with bacterial counts per c.c. of the wash water, using the same machine before and after cleaning of the cylinder. It is apparent that the sanitary efficiency of the process is not satisfactory when the cylinder acts as a bacterial reservoir during the procedure. We wish to call attention to the irregularity of the counts in the the cylinder in contact with the clothes.

There is a seasonal variation in the bacterial counts of clothes received by laundries. During the warm months the bacterial flora of clothes is much higher than during cold months of the year. Table VIII gives the summary of a year's cycle by months in one laundry studied.

TABLE VIII

Laundry B

Light Colored Clothes

Average Monthly Flush

Last Rinse and After Sour

Bacterial Counts per c.c. for 1 Year

	Flush	*Last Rinse*	*After Sour*	*Maximum Temperature*
January	885,750	19,850	76	46° F.
February	322,925	17,484	37	42° F.
March	349,465	9,236	92	47° F.
April	744,480	13,248	112	66° F.
May	2,876,487	51,504	224	77° F.
June	4,498,500	20,331	361	84° F.
July	14,063,111	27,149	427	88° F.
August	18,514,530	27,122	430	95° F.
September	16,288,870	36,378	426	91° F.
October	2,055,090	55,188	388	72° F.
November	1,203,697	16,050	216	56° F.
December	850,045	19,646	119	48° F.

Staphylococcus albus is the predominant bacterium in the flora in all wash waters from flush to the after sour rinse. This is the microörganism that increases in the clothes during the warm weather months of the year. The flora in the after sour rinse are usually large china white colonies of *Staphylococcus albus*.

A part of this high count after the souring operation was due to dirty cylinders. This is shown in Table IX. If the low temperature washing formula is used several times each day a wooden cylinder will build up a surface deposit in 4 to 6 weeks that will materially influence the sanitary quality of the washing process. We have found that if a cylinder is cleaned properly, and then once a week this cylinder is used for high temperature washes, it will perform in a sanitary manner for at least 6 weeks before it will show by both surface swab and rinse water high bacterial counts. If the clean cylinder is used on alternating days for high and low temperature washes, it will remain clean for several months.

TABLE IX

Influence of Clean Cylinders on the Average Monthly Bacterial Count During Summer Months

Low Temperature Washing Formula

	July, 1937	*August, 1937*
Cylinders cleaned:	May 1, 1937	August 1, 1937
Flush	14,063,111	4,536,962
Last Rinse	27,149	27,122
Sour Rinse	427	218
Maximum Monthly Temperature	88° F.	95° F.

Table X gives a résumé of a series of experiments to determine the relationship between the bacterial counts in the water and the bacteria on the clothes. We are more interested in the bacteria remaining on the wearing apparel than in those in the wash waters. Test clothes were put into the wash clothes and removed after various operations. Five square inches were cut out under aseptic precautions and bacterial counts made on each sq. in. sample. The technic was to suspend the inch square sample in 10 c.c. sterile saline and shake in a machine for 10 minutes. One, 2, and 4 c.c. samples were used for shake plate counts and the inch square fabric was transferred to a sterile Petri dish and covered with melted cooled nutrient agar. The bacterial count was calculated and the last column represents averages of these experiments. Bacteria are removed from the clothes during the washing process as would be expected from the wash water count. The extraction operation (centrifugation) removes the excess water and we found this process was very effective in removing bacteria. The extraction operation lasts 10 minutes. The remaining bacteria are destroyed by ironing.

TABLE X

Relationship Between Distribution of Bacteria in Wash Waters and Fabrics

Average of 54 Experiments

Fast Colored Clothes Low Temperature Washing Formula

	Total Bacterial Count per c.c. of Wash Water	*Total Bacterial Count per sq. in. of Cloth*
Flush	3,201,950	3,776
First Suds	1,025,333	813
First Rinse	84,870	201
Last Rinse	16,263	84
After Sour kinse	201	36
Extractor		
Immediately	345	33
3 Minutes	28	10
9 Minutes	19	4
After Ironing		0

We have conducted numerous ironing experiments. We have substantiated previously published reports from other sources that the high moist temperature is an effective process in killing bacteria, vegetative forms as well as spores. We have added bacteria (*B. subtilis, B. welchii, B. megatherium,* Staphylococcus, Streptococcus, *B. coli* and *B. pyocyaneus*) to

fabrics in high concentrations before passing through the ironing machines. All fabrics—using 12 inch square pieces submerged in broth flasks—were sterile after ironing.

We do not feel that the demonstrated efficiency of the ideal ironing process should be depended upon to remove large numbers of bacteria from clothes. This is similar to expecting pasteurization to make dirty milk wholesome for human consumption.

SUMMARY

The high temperature washing formula used for white clothes and fabrics has sufficient temperature and holding time to insure a safe procedure from a public health standpoint.

The low temperature washing formula used for other classifications requires more attention. The cylinders or machines need frequent cleaning to prevent bacterial accumulation on their surfaces. The souring operation must be carried out at a hydrogen-ion concentration of between pH 3.8 and 4.2 to insure low bacterial counts.

The extraction and ironing procedures remove or kill the residual adherent bacteria in all instances studied by us.

Supervision of Food in New York City*

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IN anticipating the supervision of food in New York City, one must familiarize himself with the quantity and type of food which is received daily: the geographic confines of the city, and the points of entry. At the outset, consider a train of railroad cars, each loaded with food containing approximately 20 tons. A train of this sort which is 2 miles long, or the equivalent of 200 city blocks, would represent the approximate food bill per day for the City of New York. There is about 28,578,425 lb. of food consumed daily in New York City.

New York City comprises an area of approximately 319 square miles, with a population of 7,294,000 persons and 1,000,000 commuters and daily visitors. There are about 120,000 food establishments of all kinds, of which 25,000 are wholesale or manufacturing plants. There are 733 piers within the borders of this city where 327 ocean liners dock weekly from all parts of the world.

The milk supply for New York City is received daily from a milk shed which comprises 7 states and is within a radius of 500 miles of New York City. To furnish this milk supply, there are 62,286 establishments outside of New York City and 475 establishments within the city and the metropolitan area.

To have some control over this vast food supply, it is essential that a detailed knowledge of the points of entry of food be part of the equipment of the Administrator. He must be able to dispatch inspectors on short notice to all these points, in order to keep unwholesome or questionable food from entering the food channels. This procedure is more exemplified by the activity of the Bureau of Food and Drugs during the early part of 1936 when we were concerned with keeping condemned food from the flooded areas from entering our city. Due to precautions taken, four cars holding 80,000 lb. of semolina flour, one car holding 20,000 lb. of butter, and large quantities of meat were seized and condemned before they were able to enter food channels.

It is essential in the supervision of a food supply to know the geography of the city, especially the market areas and districts where large quantities are handled and stored. With such information on hand, it is relatively simple to conduct periodic surveys of these establishments in the given areas.

METHODS OF CONTROL

Control of all food establishments of the City of New York rests with the Bureau of Food and Drugs, of the Department of Health. The method whereby control of these food estab-

* Abstract of paper read before the Public Health Engineering Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 7, 1937.

TABLE I

Special Surveys of Different Foods and Plants

Character of Survey	Time of the Year When Survey Is Made											
	Jan.	*Feb.*	*Mar.*	*Apr.*	*May*	*June*	*July*	*Aug.*	*Sept.*	*Oct.*	*Nov.*	*Dec.*
1. Milk	x	x	x	x	x	x	x	x	x	x	x	x
2. Ice cream		x	x	x	x	x	x	x	x			
3. Carbonated waters			x	x	x	x	x	x	x			
4. Syrup factories			x	x	x	x	x	x	x			
5. Egg breaking establishments			x	x	x	x	x	x	x			
6. Summer resorts				x	x	x	x	x	x			
7. Dry storage warehouses	x	x							x	x	x	x
8. Shellfish					x	x	x	x	x			
9. Fish and fillet	x	x	x	x								x
10. Candy factories	x								x	x	x	x
11. Cold storage plants									x	x	x	x
12. Food factories	x									x	x	x
13. Spray residue on fruits and vegetables							x	x	x			
14. Meats and poultry				x							x	x
15. Milk and cream from unapproved sources											x	x

lishments is maintained, consists of dividing the city into inspection districts, each being supervised by an inspector. Major control work is carried on through seasonal activity and planned projects. Table I indicates the time of the year when special surveys are undertaken of the different foods and food manufacturing plants.

In addition to the activity of the Bureau of Food and Drugs in connection with seasonable activities and planned projects, inspectors of this bureau are required to make routine inspections of establishments under permit to conduct restaurants, bakeries, soft drinks, milk, cheese, butter and eggs, shellfish, preserved meats, etc. Also, the investigation of complaints involving food establishments requires the attention of the food inspector. During 1936 more than 12,000 complaints were investigated including every conceivable subject concerning food or sanitation in food establishments. Piers, railroads, terminals, market areas, and places where food enters the city are covered by the inspector of the particular district in which the receiving points are located.

METHODS OF INSPECTION

The essential sanitary conditions to be determined in a food establishment by an inspector are:

1. Adequate toilet facilities with running hot and cold water
2. Adequate refrigeration for perishable foods
3. Clean utensils and adequate sterilization
4. General cleanliness in and about the plant
5. Undue exposure of foods to contamination by dust, dirt and flies
6. Removal of obnoxious odors
7. Hygienic habits of the operators

A good food inspector is able to recognize quickly whether the operator is conducting his business in accordance with the fundamental sanitary laws, or is careless or slip-shod in his methods. Merchandise stored in corners or hidden behind boxes involves spoilage and undue waste; cans standing to one side or tipped on shelves indicates swells; unclean labels on cans may indicate leakers or food from salvage stores; sediment in bottled goods serves to indicate improper storage, manufacturing, packing or perhaps spoilage.

Records, dealing with the receiving

and storing of raw products and the distribution thereof, should be examined in all manufacturing plants. Information of this nature often uncovers improper methods and practices on the part of the food processor.

EDUCATION OF THE FOOD DEALER

Dealers in food generally are not acquainted with the health aspects of handling, storing, or manufacturing of foods, nor the reason for the regulations promulgated to control these conditions. A program of education whereby representative food organizations are called to meetings of their respective groups should be inaugurated. At these conferences, officials of the Food and Drug Bureau give detailed information explaining the health significance of the regulations governing the respective industries. Open discussion is held after presentation of the initial talk. Often new ideas are expressed by the industry which are of interest to the health officer and reveal problems in health control.

When the administrative office has secured the confidence of the industry, information concerning questionable practices is often brought to its attention, which leads to corrective measures being taken. The results of such conferences tend toward an understanding for better coöperation between the industry and the health administrator, ultimately benefitting the public at large.

COÖPERATION WITH OTHER HEALTH AGENCIES

Food control administrators must of necessity develop a feeling of confidence in their fellow workers in departments within the city, and other municipal, state, and federal control agencies. The policy of the Bureau of Food and Drugs of the New York City Health Department has been to cooperate and give every assistance to such agencies. The principal concern is to protect public health. This spirit of coöperation makes the food dealer realize that not only has he the city authorities to contend with but also the other local, state, and federal agencies.

PERSONNEL TRAINING

Besides the general office and field training of the new inspector, provision is made for further instruction once he has obtained the fundamentals of food and sanitary work. The personnel of the Bureau of Food and Drugs has at times taken advantage of courses at New York University, Cornell University, Massachusetts Institute of Technology, and special courses given by the State Department of Agriculture at Albany, N. Y. At present there is one man assigned to a full 1 year course in sanitary and food control at Massachusetts Institute of Technology. In addition, 10 men are assigned to take a similar short course of 8 weeks' duration at New York University. Those who have had the benefit of such courses are required to present papers at Inspectorial Meetings which are held semi-monthly. Free discussion is encouraged and better understanding developed among the personnel regarding the scientific principles of sanitary inspection and food control.

RECORD KEEPING

Records of work accomplished and findings of the inspectors in the course of their daily routine must be kept in order that results may be tabulated and future action planned. An instance in which the benefits obtained from the keeping of proper records was brought out in the methods pertaining to record keeping for food poisoning cases. Prior to the inauguration of the new system the procedure was to total the number of investigations made relative to cases where food was suspected

of causing illness. This total was accepted as the number of food poisoning cases for the current year. The present method involves the classifying of reported cases of alleged food illness into 3 groups. The first group is known as "confirmed" or "proved" food poisoning cases. The second are those which are "doubtful," and the third are those instances which are proved to be "non-food" poisoning cases.

CONCLUSION

The City of New York has a vast supply of foodstuffs coming to its more than 7,000,000 population daily. The responsibility of keeping this food supply available and wholesome at all times rests largely with the Bureau of Food and Drugs of the Department of Health. Proper control has resulted in not a single epidemic or severe outbreak caused by food for many years.

The modern health officer realizes that a safe food supply means a healthy community; that with a safe food supply it becomes his function, through educational methods, to bring to the attention of the people of his community how to use this food so that they may get the best nutritional value therefrom. Food dealers should be made to realize that the health inspectors' function is to advise and teach them the proper manner in which to conduct their food establishments. This coöperation between the dealer and the department of health leads to a safe food supply.

The Nutritionist in a City Public Health Program*

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DETROIT became interested in nutrition about 1921 when the whole nation was concerned with improving the physical conditions revealed by examinations for military service during the World War. If improvement was to be shown in the rising generation, malnutrition was one of the enemies which must be conquered. It seemed quite logical to begin with the school children of the city, and consequently a plan modeled after the very popular procedure of Dr. William Emerson was instigated.

All of you are doubtless familiar with those early methods of combating malnutrition and the results obtained therefrom. The limited number of children who could be reached by such a program showed marked improvement in nutritional status, but unless a youngster was extremely emaciated, there was not much opportunity to include him in the activities. Correction rather than prevention was the usual objective in those early programs.

As the science of nutrition developed, it became apparent that work which was limited to underweight children was wholly inadequate. The poorly fed obese youngster came into the picture and presented his particular problems; deficiency diseases were recognized and studied; prophylactic measures were carefully mapped out based on the results of scientific investigation; many things other than body weight began to enter into any consideration of malnutrition.

The trend toward preventive measures gained momentum and our nutrition program was reorganized on an entirely different basis. Assuming that all children should know the essentials of good nutrition and should be taught correct health habits in their early years, an effort was made to plan those activities which would include normal as well as abnormal children. Consequently the standard program of classes for the malnourished children was broadened to include all of the children in a chosen grade or section. Supplementary feedings were abandoned. Emphasis was placed on the formation of good health habits and attitudes rather than on gain in weight. Children who failed to grow according to established standards were subjected to intensive follow-up work. They themselves were interviewed individually and their parents were invited into conference with the nutritionists. Interest of the whole school was aroused by the display of posters and exhibits, articles in the school papers, and campaigns in the lunch rooms. The requests for the classes soon exceeded the numbers which could be handled with the limited

* Read at a Joint Session of the Child Hygiene, Foods and Nutrition, and Public Health Nursing Sections of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 9, 1937.

personnel available, and it was necessary to confine the activities to a few selected schools each semester.

In order to broaden the scope and increase the efficiency of nutrition work in the schools, it is hoped that in the near future a coöperative plan involving the classroom teacher and the trained nutritionists as consultants may be placed in operation.

While our school activities were undergoing this evolution, it became increasingly apparent that we were missing a golden opportunity to teach normal nutrition in our own prenatal and child welfare clinics. During the summer of 1930 therefore, a nutritionist was assigned the task of organizing an experimental program in these clinics. Modestly beginning with a group talk once a week in the waiting rooms, this prophylactic service rapidly proved its value. The teaching of normal nutrition has come to be considered an integral part of good prenatal care, and plays such an important rôle in the physical growth and development of children that a nutritionist is now included in the personnel of each clinic. At the present time 5 staff nutritionists divide their time among the 7 health centers and specialized divisions of the department. Their schedules are so planned that it is possible for them to cover approximately 66 per cent of the prenatal and 41 per cent of the baby clinics with regular nutrition service. Normal nutrition with all of its ramifications—food preparation, budgeting, habit training, etc.—is routinely discussed with all patients admitted to the clinics. Individual interviews, group discussions, posters, and exhibits are the technics most frequently used. In addition to normal diet instructions, the nutritionists coöperate with the clinic physicians in planning and explaining to patients any special diet orders that may be deemed necessary. Thus the doctor can use the services of a scientifically trained person to execute his dietary recommendations. In addition to the work done in the clinics, the nutritionists follow their conferences with visits to the homes of patients. Actual demonstrations of food preparation and detailed planning of budgets can be done better in the seclusion of an environment familiar to the individual. A trip to the market with a housewife is an excellent object lesson in food selection.

For the clinics which are not included in the regular schedule of nutrition work, the nutritionists are on call as needed. Cases requiring help with food problems may be referred to them either by telephone or in writing. Such refers are handled through home visiting.

As the official health agency in the community, the health department is frequently called upon to supply speakers for various organizations and interested groups in the city. Requests for talks on nutrition have been increasing with the growing food consciousness of our population. Last year 28 such requests were handled by the nutrition division in addition to the weekly radio broadcast which has been conducted for the past 3 years. Through the speaker's bureau and our radio programs, we reach a group of people that would be entirely missed if our activities were confined solely to the schools or to our clinics.

In addition to the work done with lay people, the services of the nutritionists of the Health Department are available to any agency in the city who wants to use them as consultants. Frequent committee meetings, conferences, and interviews are held, together with occasional group talks to workers in related fields. To avoid duplication of efforts in nutrition work, close cooperation among the nutritionists in the community is maintained.

The public health nurse working in

a generalized program is invariably called upon to discuss food and diet problems with the families with whom she comes in contact. The assistance she is able to give them in solving their nutrition difficulties should represent the same high standards of accuracy and timeliness as those of her nursing technics; therefore one of the most important phases of our program is the attempt to keep the entire staff of the department well informed and up to date in the science of nutrition. To maintain close enough contact with all field workers to insure uniformity in information given to the public, a plan of staff education has been evolved. At least once each month the nutritionist meets with the nurses working in her district for a discussion of food problems. Case studies, reports of recent literature and scientific meetings supply the material for these group conferences. Individual nurses and other personnel are encouraged to call upon the nutritionists for help either for themselves or for the families under their supervision. Staff members ask for all sorts of help—explanation of a dietary order they have received from their physician, recipes and menus for use in their own homes, literature to send to their friends, food budgets to make their money stretch a little farther, reference material for classwork, and so on. Every one of these contacts provides the opportunity to spread the gospel of good nutrition, and they are easily utilized as teaching situations.

Realizing the growing importance of prophylactic measures in nutrition work, the American Dietetic Association in 1932 made a recommendation to the hospitals sponsoring courses for student dietitians that their training periods could be greatly enhanced by an affiliation with a public health agency doing nutrition work. Consequently the three hospitals * offering such training in Michigan requested the Detroit Department of Health to provide such an affiliation. Giving these young women a glimpse of the possibilities of preventing many dietary disturbances and showing them the relationship between the patient in the hospital and the members of his family has been of immeasurable benefit both professionally and personally to these potential nutritionists. The 2 weeks spent with the Health Department is eagerly anticipated by most of the students and their presence brings to us a freshness of viewpoint that could not be achieved in any other way.

One of the requirements for the master's degree in public health from the University of Michigan is that the candidate shall have 3 months of practical experience in a recognized agency. When a course was planned, leading to an advanced degree in public health nutrition for students with a home economics background, the Detroit Department of Health was selected as the organization in which such students could obtain the required field work. As yet this curriculum is too new to have sent students to us, but within the next year, we expect to incorporate this activity into our program. It is our aim to give these young people experience in the routine nutrition work in addition to providing them with the opportunity to organize and conduct field studies for us. With 3 months of such experience plus the training in public health administration, statistics, public speaking, etc., which they will receive at the university, they should be well equipped to meet the growing demand for public health nutritionists.

The success of any nutrition program is largely dependent upon the people who are chosen to plan and administer it. Any sort of educational work re-

* Henry Ford Hospital in Detroit, Harper Hospital in Detroit, and University of Michigan Hospital in Ann Arbor.

quires adequate academic preparation and experience. Nutrition is a science whose subject matter is detailed and complex. The well trained nutritionist is a college graduate who has had training in the fundamental sciences—physics, chemistry, and biology—before she begins to specialize in nutrition. Her undergraduate work is done in an institution in which the home economics course is recognized by professional workers in the field. Her academic work is then supplemented by 1 or 2 years of practical experience. For membership in the American Dietetic Association, the professional organization for nutritionists and dietitians, 2 years of practical experience including a period of internship in an approved hospital is obligatory.

In addition to these professional requirements, there are certain personal qualifications necessary. Good health should certainly come first on the list since she must be a good example of the principles she preaches. With obvious nutritional defects herself, such as overweight or underweight, poor physical development, or lack of vitality, her teaching will be discounted by those with whom she comes in contact. Emotional stability and poise, because they indicate mental health, are characteristics which she must possess. The capacity to work well with all kinds of people in all walks of life is important for anyone, but for the nutritionist it is indispensable. Adaptability and ingenuity in making use of available resources is a decided asset. The person who has to wait for ideal working conditions and perfect equipment has no place in the public health field. Sympathetic understanding of and tolerance for individual variations and differences is essential to success in dealing with human beings. The true scientist, and that is what the nutritionist should be, looks at facts and bases judgment upon them rather than upon personal prejudices and feelings. Because nutrition is a rapidly developing science, the nutritionist must be ever alert to the advances being made. She must keep posted not only in her own field but in all fields directly related to her profession. She must have the initiative and interest which will stimulate her to constant study and professional growth.

If a nutritionist has these professional and personal qualifications, she will be actively interested in her professional associations and organizations. Membership in such groups is evidence of her appreciation of the need for constructive progressive advancement in her chosen field of activity. Unless she has some means of contact with other workers in the same and allied fields, her educational program will not have the breadth of vision which should be its outstanding characteristic.

The objective of the nutrition service in the Detroit Department of Health is the attainment of the best possible state of nutrition for the citizens of the community. To achieve this end, there are several aims guiding the activities of the nutritionists:

1. To arouse an interest in and an appreciation of the relationship existing between good health and normal nutrition
2. To maintain a source of authentic and reliable information on all matters pertaining to the feeding of people
3. To prevent and correct nutritional deficiencies within the limits of an educational program
4. To use every available opportunity to teach sound nutrition principles and encourage the use of those principles in every day living

The methods used in attaining these aims are identical with those employed in any phase of health education. Group discussions in clinics, schools, and community organizations can serve to arouse interest in nutrition; individual conferences, either personal or by correspondence, offer more specific help, and are probably the most effec-

tive technics; radio talks and printed literature have their place in supplying large numbers of people with general information; consultation service for schools and other agencies provide the means for much indirect teaching; and coöperation with educational institutions serve to make future professional workers aware of the possibilities inherent in their chosen field of activity. Posters and exhibits, carefully planned and judiciously used, can contribute materially to the teaching of health subjects. Any well rounded public health nutrition program should make use of a combination of any or all of these devices. The needs and facilities of the community must be considered in determining the most effective means of disseminating educational material.

If science is to counteract faddism, the official health agency in any community must be prepared to dispense authentic and reliable information on all subjects pertaining to health. Nutrition is no exception, and with the developing food consciousness of our population, the trained nutritionist is rapidly becoming an essential member in the personnel of all organizations which are striving adequately to meet community needs.

Schick Reactions in Students of Medicine

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DURING the 7 years 1930–1936, each student in the sophomore class at St. Louis University School of Medicine was Schick tested, and records have been kept. Information has been collected regarding Schick reactions of 816 students, the majority of whom were between the ages of 22 and 27; a few, only 20 or 21, and an insignificant number ranged to 29 years.

Information has been obtained regarding the place of birth and home address of each student as well as personal history of diphtheria, immunization against diphtheria, and administration of antitoxin for therapeutic or prophylactic purposes.

For the purpose of the present study the individuals have been divided into 4 classes according to previous residence on the basis of (1) continuous residence in a larger community, (2) continuous residence in a smaller community, (3) birth in a larger and later removal to a smaller community, and (4) birth in a smaller and later residence in a larger community. Any community of 50,000 population or more has been classed as large, and one of less than 50,000 population was classed as small. In our first attempts to classify according to size of the community we set up 3 classes, 50,000 population and more, between 50,000 and 10,000, and less than 10,000, and 6 further classes as regards place of birth and later residence. It became apparent that the 4 classes listed gave a simpler, and at the same time a true picture of the occurrence of positive and negative Schick reactions in relation to residence. The 4 groups were suggested largely by the percentage figures of Schick negative reactions among those giving no history of diphtheria or of immunization.

In tabulating the history of the individuals in relation to diphtheria, administration of antitoxin, or in relation to immunization, we have set up initially 7 classifications:

a. Those who had had diphtheria and immunization (it is not always clear whether these individuals received only antitoxin or both antitoxin and some active immunizing agent)
b. Those who had had diphtheria but had not been treated with any agent to produce active immunity
c. Those who had received toxin-antitoxin mixture to produce active immunity
d. Those who had received injections of unknown nature to produce active immunity
e. Those who had received prophylactic injections (presumably antitoxin)
f. Those who had received antitoxin (not having had diphtheria)
g. Those giving no history of any therapeutic or prophylactic treatment

Certain of these groupings may seem unnecessary, but they may have certain value. In the tabulations the various original groupings relating to history have been combined so that larger and more inclusive groupings are presented as well as the smaller ones. Thus, in a second part of Table II, all individuals having had a diphtheritic infection

TABLE I

Distribution by Residence of the 7 Annual Student Groups

Residence \ Year →	1930–31		31–32		32–33		33–34		34–35		35–36		36–37		Total	Average
		%		%		%		%		%		%		%		%
Larger Communities	72	57	57	49	53	50	62	53	67	53.6	60	57.6	64	52.4	435	53.3
Larger (early) Smaller (later)	6	4.8	5	4.3	7	6.6	11	9.4	7	5.6	8	7.7	3	2.5	47	5.8
Smaller (early) Larger (later)	10	8	7	6	5	4.7	4	3.4	12	9.6	8	7.7	7	5.7	53	6.5
Smaller Communities	38	30	47	40.6	41	38.6	40	34	39	31.2	28	27	48	39.4	281	34.4

or having received treatment possibly leading to active immunization are listed in one group (*i.e.*, all who might have developed an acquired active immunity), while all others who might not have acquired active immunity through active immunization or through infection are listed in a second group. In Tables III and IV only the figures relating to these 2 summarized groups are presented.

In this group of 816, 72.2 per cent (590) give no history of diphtheria or immunization, while 11.7 per cent (96) give a history of diphtheria. Only 17 per cent (139) of the individuals reported having received active immunization (this includes the group who had diphtheria and were immunized but not those who had diphtheria with no history of active immunization). Only 10.5 per cent reported active immunization but no history of diphtheria, while 5.4 per cent (44) were passively immunized.

Table I shows the distribution by residence in each annual group observed. There is sufficient similarity to justify the assumption that the material is reasonably homogeneous.

TABLE II

Occurrence of Schick Reactions in Relation to Residence and Past History

Part I

History → / Schick → / Residence	(a) Diphtheria and Immunization		(b) Diphtheria		(c) Toxin Antitoxin Immunization		(d) Other Active Immunization		(e) Prophylaxis (Passive)		(f) Received Antitoxin		(g) No History of Immunization		Totals		
	+	—	+	—	+	—	+	—	+	—	+	—	+	—	+	—	
Larger Communities	13	21	3	27	1	10	5	29	2	6	1	9	102	206	127	308	435
		61.8%		90%		90.9%		85.3%		75%		90%		67%		70.8%	
Larger (early) Smaller (later)	1	2	1	1	—	1	—	2	—	1	1	3	13	21	16	31	47
														61.8%		66%	
Smaller (early) Larger (later)	1	—	1	—	—	1	—	3	—	1	2	1	15	28	19	34	53
														65%		64%	
Smaller Communities	4	11	2	8	4	9	7	14	—	2	8	7	103	102	128	153	281
		73.3%		80%		69.2%		66.7%				46.7%		49.8%		54.4%	
Totals	19	34	7	36	5	21	12	48	2	10	12	20	233	357	290	526	
		64.1%		83.7%		80.7%		80%		83.3%		62.5%		60.5%		64.5%	

On the basis of residence in larger and smaller communities, and without regard to the previous history of diphtheria, it will be noted (Table II, Part I, Totals column) that the percentage of negative Schick reactions decreases as we pass from residence in larger communities to residence in smaller, and a sharp drop in Schick negative individuals may be noted when we pass from those who resided for some portion of their life in a larger community. Although in some categories the numbers of individuals are too small to warrant definite statement, there appears the suggestion (Table II, Part I, Columns c and d) that even among those exposed to active immunization the likelihood of developing a negative Schick test is greater with continuous residence in the larger community. Among 45 individuals resident in larger communities 86.7 per cent were Schick negative, while among 34 individuals having lived in smaller communities only 67.6 per cent were Schick negative. The relationship of the Schick reaction to residence is, however, striking when we consider the group which presumably developed immunity naturally. The Schick negative individuals are slightly more common among those having lived permanently in larger communities than among those having spent some portion of their lives in smaller communities, and considerably

TABLE II

Part II

History	*All Cases Diphtheria and All Actively Immunized*		*All Not Actively Immunized*	
Schick →	+	−	+	−
Residence				
Larger Communities	22	87 79.8%	105	221 67.8%
Larger (early) Smaller (later)	2	6 75%	14	25 64.1%
Smaller (early) Larger (later)	2	4 66.7%	17	30 63.8%
Smaller Communities	17	42 71.2%	111	111 50%
Totals	43	139 76.4%	247	387 61%

TABLE III

Residence in Larger or Smaller Communities, Past History of Diphtheria or Active or Passive Immunization and Schick Tests Shown by Years

		History	*Diphtheria and Immunization Diphtheria, Toxin Antitoxin Active Immunization*		*Prophylactic Treatment Antitoxin No History*	
Residence	*Years*	*Schick* →	+	−	+	−
Larger Communities	1930–31		3	19 (86.4%)	6	44 (88%)
	31–32		4	8 (66.17%)	12	33 (73.3%)
	32–33		2	6 (75%)	14	31 (68.9%)
	33–34		4	10 (71.6%)	14	34 (70.8%)
	34–35		2	19 (90.5%)	14	32 (60.6%)
	35–36		2	10 (83.3%)	23	25 (52.1%)
	36–37		5	15 (75%)	22	22 (50%)
Smaller Communities	1930–31		..	5	9	24 (72.7%)
	31–32		4	4 (50%)	17	22 (56.4%)
	32–33		3	7 (70%)	13	18 (58.1%)
	33–34		3	5 (62.5%)	18	14 (43.7%)
	34–35		3	6 (66.7%)	17	13 (43.3%)
	35–36		1	2 (66.7%)	13	12 (48%)
	36–37		3	13 (81.2%)	24	8 (25%)

TABLE IV

Comparison of Schick Reactions in Classes of First 3 Years and Last 3 Years by Residence in Larger or Smaller Communities and History (in Two Groups)

		History	Diphtheria and Immunization Diphtheria, Toxin Antitoxin Active Immunization		Prophylaxis Antitoxin No History	
Residence	Years	Schick →	+	−	+	−
Larger Communities	1930–31, 31–32, 32–33		9	33 (78.5%)	32	108 (77.1%)
	1934–35, 35–36, 36–37		9	44 (83%)	59	79 (57.2%)
Smaller Communities	1930–31, 31–32, 32–33		7	16 (69.5%)	89	64 (62.1%)
	1934–35, 35–36, 36–37		7	21 (75%)	54	33 (37.9%)

more frequent than among those who resided constantly in smaller communities (Table II, Part 2).

In Table III the classification in relation to residence and Schick reaction, for each of the 7 annual student groups is shown. Only the figures for those individuals who lived constantly in larger and smaller communities are considered here, and only the summarized group relating to past history of diphtheria and immunization are presented. The numbers are small in many cases but certain considerations are suggested. While the per cent of negative Schick reactions among those individuals who were exposed to active immunization remains reasonably high during these 7 years, the same cannot be said as to those not exposed to active immunization. In both the group resident in large and that in smaller communities a tendency toward a progressive fall in the number of Schick negative individuals may be noted in the later years of the study.

When the groups of the first 3 years are combined and compared with the group of the last 3 years covered, these facts become even more striking in view of the greater number of individuals in each group (Table IV).

The combined figures for these groupings again point to the difference between those living in larger communities and those in smaller communities, and there is the suggestion that even among those who had been exposed to active immunization those living in larger communities stand a better chance of being Schick negative.

Among those actively immunized the difference in per cent of Schick negative reactors between those living in larger and in smaller communities is possibly not significant, but it is interesting that the per cent of Schick negatives is slightly higher in both of the residence groups of the last 3 years.

DISCUSSION

One must be cautious in attempting to draw definite conclusions from data as scanty as those presented here, but certain suggestions seem to appear.

As has been pointed out by others, the relative importance of residence in a larger community in relation to devel-

opment of natural immunity becomes evident, and there is definite suggestion that the chances of developing natural immunity in the smaller sized community is relatively less than in the larger community. Thus if we consider the percentage of Schick negatives in 3 groups:

1. All individuals with some residence in communities over 50,000 population (412 total, 136 positive, 276 negative)
2. All individuals with some residence in medium sized communities, between 10,000 and 50,000 population (137 total, 61 positive, 76 negative)
3. All individuals with some residence in smallest communities, under 10,000 population (197 total, 92 positive, 105 negative)

(These three groups of course overlap) —we find that in (1) 66.2 per cent are Schick negative, in (2) 55.4 per cent are negative, and in (3) 53.3 per cent are negative.

The total percentage of Schick negative individuals in the entire group is probably lower than might be expected (64.5 per cent) in this age group.

The per cent of Schick negatives among individuals who had been exposed to active immunization is somewhat low (76.4 per cent). Peculiarly, this low percentage among actively immunized individuals is chiefly affected by the relatively small number of Schick negative individuals among those who had had diphtheria and gave in addition a history of active immunization.

There is also the suggestion that the percentage of Schick negatives is greater in the larger community group than in the smaller even when comparing only those actively immunized. The difference is, however, not great enough to warrant more than the suggestion that maintainence of the Schick negative state may in some cases be dependent upon repeated exposure.

The most striking suggestion which appears is that there is the apparent gradual diminution of Schick negatives among those who give no history of exposure to active immunity, during the period covered in this study. While the percentage distribution according to residence varies slightly from year to year it is hardly likely that this factor is responsible for the change. It would rather appear that some other factor accounts for the diminution in negative reactions in the successive groups. It may well be that lack of exposure to sub-clinical contact with diphtheria bacilli is responsible. If this tendency is continued in future years (and it is our intention to continue the study of future classes), it raises certain questions of importance in relation to control of diphtheria.

Since it is assumed that the development of immunity to diphtheria in non-actively immunized individuals is related to possibilities for contact with the causative agent, and if active immunization within a community tends to reduce the opportunities for contact of the non-immunized individual with diphtheria bacilli, then those individuals who are not actively immunized must be particularly guarded, or the campaigns for active immunization must be pressed with greater vigor so as to cover as nearly 100 per cent of individuals as possible.

CONCLUSIONS

1. In 7 successive groups of medical students studied, the importance of the place of residence—large or small community—is evident in relation to the development of a negative Schick reaction.
2. The percentage of Schick negative individuals is rather lower than might be expected in such an age group.
3. There is evident the suggestion that the percentage of Schick negative individuals among those not exposed to active immunization, has steadily decreased over the period of this study.

Evaluation of Dental Programs for Children*

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American Society for the Promotion of Dentistry for Children, Elizabeth, N. J.

A STUDY of public health literature will reveal a need of technics for evaluating dental programs. This void exists in measuring community dental programs and analyzing trends in dental health of individuals, communities, and nations.

This discussion will be limited to two points:

1. The chart recently designated as a national chart for group inspections of school children to determine dental needs
2. The Lost Permanent Tooth Index for evaluating dental programs among school children

NATIONAL DENTAL INSPECTION CHART

This chart (Figure I) is to be used in surveying dental needs of school age children. It is hoped that the designation by the American Society for the Promotion of Dentistry for Children, the American Dental Association, and the proposed sanction of the American Public Health Association, will result in widespread adoption. If this form is used as a basis of dental inspection charts in all local and state dental programs, it will be possible within a few years to make more accurate comparisons and to determine dental needs with greater uniformity. However, a valid and reliable method for evaluating dental programs is required. The Lost Permanent Tooth Index is suggested for this purpose.

LOST PERMANENT TOOTH INDEX

HOW IS IT OBTAINED?

The teeth of 12–14 year old children are examined by a dentist. This age group is selected because 28 permanent teeth should be in place, that is, all but the 4 third-permanent molars or "wisdom" teeth. Then, too, 7th and 8th grade conditions indicate the results of more than 6 years of service and/or instruction.

Two items are observed and charted: (1) Permanent teeth requiring extraction, (2) Permanent teeth previously extracted. Both constitute what may be termed "lost permanent teeth."

By using the compiling chart (Figure II) it is possible to obtain:

1. *The number of lost permanent teeth per 100 children*—By lost permanent teeth is meant the total of *both* permanent teeth requiring extraction and previously extracted permanent teeth.
2. *The percentage of children with lost permanent teeth*—That is, the percentage of children having permanent teeth requiring extraction and/or previously extracted permanent teeth.

It may be noted that this Index does not evaluate dental programs for

* Read before the Child Hygiene Section of the American Public Health Association at the Sixty-sixth Annual Meeting in New York, N. Y., October 5, 1937.

preschool children. The author is preparing a Lost Deciduous Molar Index for this purpose.

Is the suggested method of evaluating dental programs practical, valid, and reliable?

PRACTICABILITY

The simplicity of the technic and the little time (1 minute or less per pupil) consumed in obtaining the data for this Index would seem to indicate that this method of evaluating dental programs is practical.

VALIDITY

The White House Conference on Child Health and Protection designated

FIGURE I

National Dental Inspection Chart for School Children

For dentists using mouth mirror and explorer.

Last Name ..... First Name ..... City or County ..... State .....

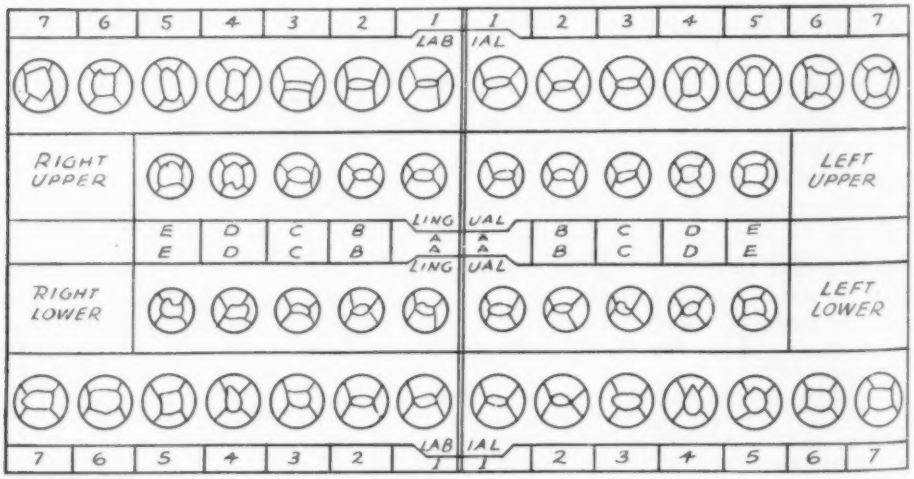
Date of Examination ..... Age ..... Years ..... Months ..... Sex ..... Color .....

School ..... Grade .....

1. Is dental treatment indicated? Yes ..... No .....
2. Has child ever received dental treatment? None .....
   Fillings .....
   Extractions .....
3. Number of teeth which have been filled — Deciduous ..... Permanent .....

		Deciduous	Permanent
4. Number of teeth requiring	Extraction	.....	.....
	Fillings	.....	.....

5. Number of missing teeth (Extracted permanent teeth only) .....
6. Condition of gums — Normal ..... Diseased .....
7. Is orthodontic treatment indicated? Yes ..... No .....



V **Extraction.**

FIGURE II

COMPILING CHART

LOST PERMANENT TOOTH INDEX

City _____ Age of Pupils _____

School _____ Grade of Pupils _____

NUMBER OF CHILDREN EXAMINED	NUMBER OF CHILDREN HAVING PREVIOUSLY HAD								NUMBER OF CHILDREN REQUIRING THE EXTRACTION OF								NUMBER OF CHILDREN HAVING EITHER OR BOTH — EXTRACTED PERMANENT TEETH OR PERMANENT TEETH REQUIRING EXTRACTION	TOTALS
	0 Permanent Teeth Extracted	1 Permanent Tooth Extracted	2 Permanent Teeth Extracted	3 Permanent Teeth Extracted	4 Permanent Teeth Extracted	5 Permanent Teeth Extracted	6 Permanent Teeth Extracted	7 Permanent Teeth Extracted	0 Permanent Teeth	1 Permanent Tooth	2 Permanent Teeth	3 Permanent Teeth	4 Permanent Teeth	5 Permanent Teeth	6 Permanent Teeth	7 Permanent Teeth		

"The retention of the permanent teeth, sound and healthy, functioning adequately and with comfort"[1] as an objective of dental programs.

Inasmuch as this Index shows the number of lost permanent teeth and indicates to what extent the permanent teeth are being retained in sound vital condition, it does measure dental health in accordance with a standard set by an authoritative body.

that this Index does measure dental health conditions:

1. It was noted that the children in communities of less than 5,000 population had lost fewer permanent teeth than did children in the more populated communities.
2. Negro children had fewer lost permanent teeth than white children.
3. Other conditions being similar, children in communities with well planned dental programs showed fewer lost permanent teeth than those in communities without programs.
4. Children in communities of high economic level had fewer lost permanent teeth than children in poorer communities.

See Figure V for data.

FIGURE III

How the Lost Permanent Tooth Index Enables One to Compare Contemporary Programs

Town A	*Date—October, 1937*	*Town B*
70%	7th and 8th grade children with lost permanent teeth	80%
150	Number of lost permanent teeth per 100 children—7th and 8th grades	170

FIGURE IV

How the Lost Permanent Tooth Index Enables One to Measure Progress Attained by Dental Programs

March, 1932	7th and 8th grade children with lost permanent teeth	80%
March, 1936	7th and 8th grade children with lost permanent teeth	40%
March, 1932	Number of lost permanent teeth per 100 children—7th and 8th grades	140
March, 1936	Number of lost permanent teeth per 100 children—7th and 8th grades	60

Figure III shows how the Lost Permanent Tooth Index may be used to compare contemporary programs.

Figure IV indicates how it may be used to measure progress within a community.

The following conclusions, arrived at by studying the Lost Permanent Tooth Index of 650 communities as obtained from the U. S. Public Health Dental Survey of School Children,[2] indicate

RELIABILITY

The reliability of this Index was tested by having a number of dentists examine the same children. Uniformity ranged from 85 to 95 per cent,* evidence of satisfactory reliability.

* Standard deviation ± 8.6.

FIGURE V

1. AVERAGES ACCORDING TO SIZE OF COMMUNITY

Population	*Lost Permanent Teeth per 100 Children*
100,000 and over	80.8
25,000–99,999	90.2
10,000–24,999	70.0
5,000– 9,999	75.8
Under 5,000	54.6

2. COMPARISON OF NUMBER OF LOST PERMANENT TEETH AMONG WHITE AND NEGRO CHILDREN

	Lost Permanent Teeth per 100 White Children	*Lost Permanent Teeth per 100 Negro Children*
In 22 cities	51.4	36.6

3. COMPARISON OF NUMBER OF LOST PERMANENT TEETH AMONG CHILDREN IN COMMUNITIES HAVING DENTAL PROGRAMS AND AMONG CHILDREN IN COMMUNITIES NOT HAVING DENTAL PROGRAMS

Communities With Dental Programs

	Lost Permanent Teeth per 100 Children
Pontiac, Mich.	19.3
Atlanta, Ga.	26.5
Des Moines, Ia.	41.3

Guggenheim Clinic (New York) Report

	Lost Permanent Teeth per 100 Children
Children entering service early with regular treatment	36
Children obtaining late dental care (10 years or over)	105

Communities Without Dental Programs or With Inadequate Programs

	Lost Permanent Teeth per 100 Children
Camden, N. J.	142
Lyndhurst, N. J.	199
Pittsburgh, Pa.	138.6

4. COMPARISON OF NUMBER OF LOST PERMANENT TEETH AMONG CHILDREN IN COMMUNITIES OF HIGH ECONOMIC LEVEL AND AMONG CHILDREN IN COMMUNITIES OF LOW ECONOMIC LEVEL

High Economic Level	*Lost Permanent Teeth per 100 Children*
Englewood, N. J.	73
Westfield, N. J.	49
Palo Alto, Calif.	11

Low Economic Level	*Lost Permanent Teeth per 100 Children*
Rahway, N. J.	168
Hoboken, N. J.	156
Garfield, N. J.	169

Note: Above data applied to children 12–14 years.

ATTAINABLE STANDARDS

The question is frequently asked: "What may be considered attainable standards?" Tentatively, it is suggested that attainable standards among white children be set in accordance with economic status. We may reasonably expect that the number of lost permanent teeth per 100 white children of 12–14 years would be:

For Economic Level	*Lost Permanent Teeth per 100 Children (12–14 Yrs.)*
$5,000 and up	0–19
$2,000–$5,000	20–49
Below $2,000	50–70

These suggested attainable standards merit conditional acceptance for the purpose of further study and analysis.

The author believes that, including *all* of the following will, in 5 years, effect results indicated by the suggested attainable standards: (1) educational programs to improve nutritional and dental practices, (2) repetitive dental inspections by dentists using mouth mirror and explorer plus follow-up guidance programs, and (3) preventive dental service programs for under-privileged children with emphasis on preschool and lower elementary grade children, and treatment provided for older children as well. *Dental service programs based on emergency treatments will not reduce the number of lost permanent teeth.*

Summarizing, the adoption of the National Dental Inspection Chart for School Chlidren will aid all communities to determine dental needs among children with greater uniformity. The use of the Lost Permanent Tooth Index is recommended as a reliable, valid, and practical means of evaluating dental programs among school children.

BIBLIOGRAPHY

1. White House Conference on Child Health and Protection: *The School Health Program.* Section III C. New York: Century Co., 1932, p. 101.

2. *Pub. Health Bull. 226.* Washington, D. C.: Gov. Print. Office, 1936.

Public Health Degrees and Certificates Granted in 1937

THE Committee on Professional Education of the American Public Health Association presents the following tables which are similar to those published in previous years covering data concerning students registered in schools of public health, and the public health degrees granted in the calendar year 1937.

College Enrollment in Public Health Courses

Number of students enrolled, and Public Health Degrees and Certificates conferred in the year 1937 by United States and Canadian Universities. Unless otherwise indicated courses require at least 1 year of residence.

Table I

	No. of Students Registered 1936–1937				*No. of Degrees Granted 1937*		
Name of University	*Men*	*Women*	*Total*	*Degrees Offered*	*Men*	*Women*	*Total*
University of California	107	15	122	Dr.P.H.	0	0	0
				M.A.	0	0	0
				A.B.	3	4	7
				C.P.H.	16	1	17
				Certif. of Completion [1]	82	1	83
DeLamar Institute of Public Health, Columbia University	11	3	14	M.S.P.H.	15	6	21 [2]
Harvard School of Public Health	36	6	42	Dr.P.H.	1	0	1
				M.P.H.	18	2	20
				C.P.H.	6	0	6
Johns Hopkins School of Hygiene and Public Health	132	24	156	Dr.P.H.	4	0	4
				Sc.D. in Hyg.	9	2	11
				Sc.M. in Hyg.	0	0	0
				C.P.H.	65	0	65
Massachusetts Institute of Technology	53	15	68	S.B.	5	0	5
				S.M.	0	1	1
				Sc.D.	0	0	0
				Ph.D.	1	1	2
				Dr.P.H.	0	0	0
				C.P.H.	3	1	4
McGill University	0	0	0	D.P.H. [3]	0	0	0
University of Michigan	127	28	155	Dr.P.H.	3	0	3
				M.S.P.H.	22	8	30
University of Minnesota	18	0	18	B.A.	0	0	0
				M.A.	0	0	0
				B.S.	0	0	0
				M.S.	1	0	1
				C.P.H.	3	0	3
				Ph.D.	0	0	0

TABLE I (Cont.)

Name of University	No. of Students Registered 1936–1937 Men	Women	Total	Degrees Offered	No. of Degrees Granted 1937 Men	Women	Total
University of Toronto School of Hygiene	17	0	17	D.P.H.[3]	17	0	17
Wayne University College of Medicine	2	1	3	Dr.P.H.	1	1	2
University of Western Ontario Faculty of Public Health	0	0	0	D.P.H.[3]	0	0	0
Vanderbilt University Dept. of Preventive Medicine and Public Health	44	0	44	Certif. of Completion [1]	44	0	44
Yale University Department of Public Health	19	7	26	M.P.H.	1	2	3
				Dr.P.H.	5	0	5
				Ph.D.	1	0	1
Total	566	99	665		326	30	356

1. Short courses not over 1 semester in length.
2. Some of these students took work over a 2 year period.
3. Diploma in Public Health.

CLASSIFICATION OF PUBLIC HEALTH DEGREES AND CERTIFICATES GRANTED IN 1937

Number of persons receiving Degrees and Certificates by reason of public health courses completed:

TABLE II

Degree	No. of Degrees Granted	No. of Schools Offering Degrees
Doctor of Public Health	15	7
Doctor of Science	11	2
Doctor of Philosophy	3	3
Certificate in Public Health	95	5
Master of Public Health	23	2
Master of Science in Public Health	51	2
Master of Science	2	3
Master of Arts (Public Health Major)	0	2
Diploma in Public Health	17	3
Bachelor of Science in Public Health	5	2
Bachelor of Arts (Public Health Major)	7	2
Certificate of Completion	127	2
Total	356	

Number of Degrees and Certificates conferred by United States and Canadian Universities for 1935, 1936 and 1937:

TABLE III

School	Degree	1935	1936	1937
University of California	A.B.	2	0	7
	C.P.H.	0	0	17
	Certificate of Completion	0	0	83

TABLE III (Cont.)

School	*Degree*	*1935*	*1936*	*1937*
DeLamar Institute of Public Health	M.S.P.H.	9	11	21
Harvard School of Public Health	Dr.P.H.	0	2	1
	M.P.H.	13	20	20
	C.P.H.	6	4	6
Johns Hopkins School of Hygiene and Public Health	Dr.P.H.	6	7	4
	Sc.D. in Hyg.	6	5	11
	Sc.M. in Hyg.	3	4	0
	C.P.H.	28	41	65
Massachusetts Institute of Technology	S.B.	13	9	5
	S.M.	1	0	1
	Ph.D.	0	0	2
	C.P.H.	3	0	4
McGill University	D.P.H.[1]	0	2	0
University of Michigan	Dr.P.H.	3	5	3
	M.S.P.H.	22	11	30
University of Minnesota	M.S.	No Figures	No Figures	1
	C.P.H.	No Figures	No Figures	3
University of Toronto	D.P.H.[1]	11	10	17
Wayne University College of Medicine	Dr.P.H.	0	0	2
University of Western Ontario	D.P.H.[1]	No Figures	No Figures	0
Vanderbilt University	Certificate of Completion	No Figures	No Figures	44
Yale University	M.P.H.	0	1	3
	Dr.P.H.	1	1	5
	Ph.D.	1	1	1
	C.P.H.	2	0	0
	M.S.	1	0	0
Total		131	134	356

1. Harvard does not give the C.P.H. as a degree.
2. Diploma in Public Health.

Total number of Degrees and Certificates in Public Health granted in the United States and Canada, 1935, 1936 and 1937:

TABLE IV

Degrees and Certificates	*1935*	*1936*	*1937*
Dr.P.H.	10	15	15
Sc.D.	6	5	11
Ph.D.	1	1	3
C.P.H.	39	45	95
M.P.H.	13	21	23
M.S.P.H.	31	22	51
M.S.	5	4	2
M.A.	0	0	0
D.P.H.[1]	11	12	17
B.S.	13	9	5
B.A.	2	0	7
Certificate of Completion	0	0	127
Total	131	134	356

1. Diploma in Public Health.

COLLEGE ENROLLMENT IN COURSES FUNDAMENTALLY ENGINEERING IN CHARACTER BUT PROVIDING TRAINING IN PUBLIC HEALTH WORK

TABLE V

Name of University	College Enrollment 1934–1937				Degrees Offered	Number of Degrees Granted			
	1934–1935	1935–1936	1936–1937	Total		1935	1936	1937	Total
Agricultural & Mechanical College of Texas	5	11	8	24	B.S. in C.E. (San. Eng. option)	4	6	6	16
					M.S. in Municipal & San. Eng.	1	0	1	2
Cornell University	15	12	4	31	B.S. in C.E. (San. Eng. option) M.C.E. (San. Eng. option) M.S. (San. Eng. option)	7	8	1	16
Harvard University (Graduate School of Engineering)	13	26	47[1]	86	S.M. in Eng. (Sanitary)	9	7	35	51
					S.D.	0	1	0	1
Iowa State College	8 Undergrad. 2 Graduates	7 Undergrad. 1 Graduate	7 Undergrad. 1 Graduate	22 Undergrad. 4 Graduates	B.S. in C.E. (San. Eng. option)	8	7	7	22
					M.S. in C.E. (San. Eng. option)	0	0	0	0
Johns Hopkins University	5	11	11	27	Bachelor of Engineering	5	11	11	27
					Master of Engineering	0	0	0	0
					Doctor of Engineering	0	0	0	0
Lehigh University	2	1	2	5	B.S. in San. Eng	0	1	0	1
Massachusetts Institute of Technology	18	17	10	45	S.B. in P.H.Eng.	2	4	2	8
					S.M. in P.H.Eng.	0	0	0	0
					Ph.D. in P.H.Eng.	0	0	0	0
					Sc.D. in P.H.Eng.	0	0	0	0
					D.P.H. in P.H.Eng.	0	0	0	0
					S.B. in San. Eng.	1	2	1	4
					S.M. in San. Eng.	2	0	0	2
					Sc.D. in San. Eng.	1	0	0	1
New York University	10 Undergrad. 8 Graduates	20 Undergrad. 18 Graduates	19 Undergrad. 32 Graduates	49 Undergrad. 58 Graduates	B.S. in C.E. (San. Eng. option)	9	20	18	47
					M.S. in C.E. (San. Eng. option)	1	4	4	9
Stanford University (Graduate School)	3	2	2	7	Engineer in C.E.: San. Eng.	1	1	0	2
State University of Iowa	5 Undergrad. 1 Grad. with M.S.	3 Undergrad. 1 Grad. with M.S.	9 Undergrad. 1 Grad. with M.S.	17 Undergrad. 3 Graduates	B.S. in Eng. (San. Eng. option)	6	4	10	20
University of California	30	30	50[2]	110	B.S. in Eng. (San. Eng. option)	20	9	8	37
					M.S. in Eng. (San. Eng. option)	0	0	0	0
University of Illinois	5	6	3	14	B.S. in C.E.	2	2	1	5
					M.S. in C.E.	1	3	0	4
					Ph.D.	1	0	0	1
University of Kansas	6	6	5	17	B.S. in C.E. (San. Eng. option)	3	3	2	8
					M.S. in C.E. (San. Eng. option)	0	0	0	0
University of Minnesota [3]	No figures	No figures	16	16	M.S.	No figures		0	0
West Virginia University	6	6	0	12	B.S.C.E. (San. Eng. option)	6	6	0	12
Total	142	178	227	547	Total	90	99	107	296

1. 2 were special students, 1 part time and 2 not degree candidates.
2. Of these 2 were graduate students.
3. Department of Preventive Medicine & Public Health—special short courses.

Summary:

No. of Students Registered	1934–1935	142	
" " " "	1935–1936	178	
" " " "	1936–1937	227	
	Total	547	

No. of Degrees Granted	1934–1935	90	
" " " "	1935–1936	99	
" " " "	1936–1937	107	
	Total	296	

PUBLIC HEALTH NURSING DEGREES AND CERTIFICATES GRANTED 1936–1937

In the Academic Year 1936–1937 there were 2,408 graduate students and 58 undergraduate students registered in public health nursing courses approved by the National Organization for Public Health Nursing. In the summer session or the 4th quarter of 1937 there were 1,040 graduate students and 3 undergraduate students enrolled. The following table indicates the number of students who received degrees and certificates in Public Health Nursing for this period. These figures have been supplied by the National Organization for Public Health Nursing and are printed here with permission. NOTE: No report received from Simmons College.

TABLE VI

Course	*Certificates*	*B.S. or B.A. Degree*	*M.S. or M.A. Degree*
University of California Division of Nursing Education	47	53	0
Catholic University of America School of Nursing	5	3	0
University of Michigan Division of Hygiene and Public Health	13	12	2
Wayne University Nursing Education Department	51	5	0
University of Minnesota Department of Preventive Medicine and Public Health	34	18	0
Teachers College, Columbia University Department of Nursing Education	0	38	10
Fordham University Social Service Department	3	0	0
Syracuse University Department of Public Health Nursing	9	2	0
Western Reserve University School of Applied Social Sciences	52	18	3
University of Oregon Medical School Department of Nursing Education	11	6	0
University of Pennsylvania Department of Nursing Education	9	3	0
George Peabody College for Teachers Nursing Education Department	32	15	2
Vanderbilt University School of Nursing	16	4	0
College of William and Mary, Richmond Division School of Social Work and Public Health	27	3	0
Medical College of Virginia St. Philip School of Nursing	4	0	0
University of Washington School of Nursing Education	35	27	1
University of Hawaii School of Applied Science	13	0	0
Total	361	207	18

For the school year 1936–1937 the total course registration was reported as 3,509 as compared with 3,353 in 1935–1936, an increase of 156 students. The number who received certificates or who completed the full public health nursing program in the school year 1936–1937 or who received degrees was 586 as compared with 445 in 1935–1936, an increase of 141.

(For Committee members, see next page.)

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Vol. 28

American Journal of Public Health
and THE NATION'S HEALTH

Official Monthly Publication of the American Public Health Association

Volume 28 July, 1938 Number 7

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WESTERN BRANCH, AMERICAN PUBLIC HEALTH ASSOCIATION

NINTH ANNUAL MEETING
PORTLAND, OREGON

THE Western Branch celebrated its tenth birthday in Portland, Ore., June 6–8, the city in which it was organized on June 18, 1928. Dr. Frederick D. Stricker, long-time State Health Officer of Oregon, who made the motion to form a permanent Western Branch of the A.P.H.A., ten years ago, was made President-Elect.

The meeting was welcomed by the Mayor of the city, the Honorable Joseph K. Carson. Unfortunately the Governor of Oregon was detained. The President, Dr. P. W. Covington, opened the meeting with a historical sketch, after which the regular program was taken up.

The program throughout was excellent, full of interest for every class of membership. Deserving of special mention was the discussion "Progress in Public Health Under Title VI of the Social Security Program," by Assistant Surgeon-General C. E. Waller. This gave, for the first time that we know of, many facts in which all public health workers are interested. Other high lights of interest included a discussion of syphilis control, therapy, and laboratory aids; a panel discussion of public health nursing functions; a symposium on school and college hygiene; newer developments in plague distribution, dissemination, and control; and a discussion of tourist camp sanitation.

There were several sections, among which the laboratory workers deserve particular mention. This section had the largest attendance on record. Every state in the Western Branch and the Province of British Columbia were represented. Notable among the papers were "Developments in the Slide Test for the Diagnosis of Syphilis" and "The Culture of the Gonococcus."

The registration at the meeting approximated 550. The attendance was also the greatest of any meeting since this organization was formed. The membership of the Western Branch is now more than 1,300, of whom 801 are Fellows or active members of the parent Association.

This meeting saw the election of an unusual number of new members, since Dr. Fred T. Foard, Surgeon, U. S. Public Health Service, conducted an aggressive campaign for members throughout the Western Branch territory, and from his own pocket offered a $25 cash prize for the state health officer who obtained the largest number of applications between January 1 and June 6, 1938.

An honor scroll was provided by Dr. P. W. Covington, the President, to be awarded to the state health officer who obtained the largest number of applications for membership in relation to population. This scroll is to be engraved with the name of the state health department winning it, to remain in its possession until it is awarded on the same basis again to the same state or to some other. This plaque is the property of the Western Branch, and is named in honor of its donor "The Platt W. Covington Honor Scroll." Both of these were awarded to Dr. J. L. Jones, State Health Officer of Utah.

A number of other organizations met at the same time and in the same hotel, and shared in the meetings of the Western Branch. Among these were the Conference of State Supervisory Nurses, Conference of City and County Health Officers of Oregon, Washington State Public Health Association, Oregon Nutrition Council, Northwest Association of Milk Inspectors, and the Oregon Milk Inspectors' Association.

The exhibits, both commercial and scientific, were excellent. Perhaps those of the Los Angeles City Board of Health on "Rabies" and that by the Montana Rocky Mountain Spotted Fever Laboratory at Helena, Mont., deserve special mention. In the latter were unquestionably the best exhibits of ticks concerned in the transmission of spotted fever which are in existence. It was also illustrated by the most beautifully done drawings.

The annual banquet took place on Tuesday evening, and was attended by more than 400. A most unusual, but none the less welcome and honored guest, was Darigold Periwinkle, owned by Mr. and Mrs. M. C. Fleming of Portland, who is the World Champion Golden Guernsey. Perhaps her presence had something to do with the meetings of the Northwestern and Oregon Milk Inspectors' Associations and the fact that the dairying industry in the Northwest is going ahead by leaps and bounds. In the general discussions, the sanitation of milk production and pasteurization were well to the fore.

Toward the end of the banquet Dr. Guy S. Millberry, President-Elect, succeeded Dr. Platt W. Covington as President for the ensuing year.

It was especially pleasant to see the large number of Canadian visitors, headed by the honored Dean of health officers, Dr. Henry E. Young of Victoria.

The hospitality of Portland is famous, and those in attendance who had not experienced it before were fully convinced that none of the reports of it which had reached them had been exaggerated. Entertainments, especially for the ladies, were provided in abundance, including drives and trips to some of the most interesting places within a hundred miles of Portland. We need hardly call attention to the fact that Portland is famous for its beautiful location, the two grand mountains that are in full view of it, and many other points of interest as well as beauty. All who were fortunate enough to attend this meeting will look forward to the first opportunity again to visit Portland, the City of Roses.

Other officers elected in addition to Dr. Stricker were: *Vice-Presidents,* Dr. J. D. Dunshee, Director, Local Health Administration, State Board of Health, Phoenix, Ariz.; E. H. Bramhall, Director of Laboratories, State Board of Health,

Salt Lake City, Utah; Anna L. Heisler, Supervising Nurse, U. S. Public Health Service, San Francisco; *Secretary*—Dr. W. P. Shepard, Metropolitan Life Insurance Company, San Francisco, Calif.; *Treasurer*—W. Ford Higby, Executive Secretary, California Tuberculosis Association, San Francisco. New Regional Board members elected were: Dr. R. L. Cleere, State Health Officer, Denver, Colo.; Dr. E. B. Godfrey, State Health Officer, Santa Fe, N. M.; Dr. A. U. Simpson, Director of Laboratories, State Department of Health, Seattle, Wash.; Elizabeth Soule, Director of Public Health Nursing, University of Washington, Seattle, Wash.; Dr. Helen A. Cary, Medical Director, Division of School Hygiene, Bureau of Health, Portland, Ore.

The next meeting will be in the San Francisco Bay Region in May or June, 1939.

ESTIMATES OF NUTRITIONAL STATUS

OF recent years communities have shown an increasing interest and participation in programs for the improvement of the nutritional status of their children. Frequently a considerable portion of the public health budget is expended for this purpose. In such programs, the routine examination of groups of children by a physician to identify the malnourished ones and give them special consideration is a commonly accepted procedure. Yet a recent paper in the *Public Health Reports* indicates that such an activity may not be as effective as it was previously considered. This conclusion is based upon the finding that there are wide disagreements in the nutritional estimates of the same children by different physicians. For example: It was shown that out of 108 boys examined by 6 physicians, 25 were judged malnourished by at least one of the physicians, yet only one child was so considered by every examiner. In a second sample of 113 girls examined by a second group of 6 doctors, 65 were judged to be malnourished by at least one physician and only 4 were so considered by all 6 of them. These disagreements are summarized in the statement that " the rating of nutritional status which any child is given depends to a large extent on which doctor makes the rating."

The practical significance of these findings so far as individual children are concerned is pointed out in the following illustration. If Dr. A had been a regular school physician and had examined the 113 girls, she would have indicated that 32 of them needed special attention to improve their nutritional condition. If Dr. B had been the school physician, she, likewise, would have indicated that 32 of the girls needed special service. But only 17 of those judged malnourished by Dr. A were so considered by Dr. B. Each doctor selected 15 as malnourished that were considered normal by the other physician. These data indicate the futility of nutritional programs that give special attention to a few cases regarded as deficient in nutritional status on the basis of a routine physical examination. The errors in the doctor's estimates are too great to justify the extra effort given to the individuals chosen.

It is also pointed out that the use of such judgments to determine the prevalence of malnutrition at any one time or to measure changes in the prevalence over a period of time is apt to be misleading. Wide differences in the incidence of malnutrition may arise because of the variation in the judgments

of the doctors. For example, one physician found 7 times as many malnourished children in the group of boys as did a second physician.

The findings of this paper are not altogether new to physicians. They have always known that their judgments were not infallible. Even under the best of conditions where a clinical history and some information on the hereditary background of the child may be obtained, a pronouncement on his nutritional status is difficult. Despite this difficulty the best advice a mother can obtain on an individual child is that given by a physician after he has had sufficient time to examine and study the child. But under the less favorable conditions of a rapid routine examination, such as is usually given in schools or on surveys, the difficulties of accurate nutritional estimates are practically insurmountable and such disagreements are likely to occur.

As a substitute for programs based on rendering service to a few children specially selected on such unreliable estimates, it is suggested that attention be focused on the discovery of those individuals who have faulty food habits, or whose behavior symptoms such as failure to gain in weight, lack of stamina, and lassitude, suggest the need for medical advice. Thus the interest would be in preventing the occurrence of malnutrition as well as correcting it after it occurs.

It is also suggested that research workers concentrate on the construction of valid methods of determining nutritional status rather than making surveys which are of doubtful significance because of the inaccuracies of the estimates upon which their findings are based.

Though there is no evidence to show that these two suggestions are the proper procedures, yet they would seem to warrant experimental trial by those responsible for nutritional programs.

REFERENCES

Derryberry, M. *Pub. Health Rep.*, 53:263–268, 1938.

Franzen, Raymond. *Physical Measures of Growth and Nutrition*, Chapter I. American Child Health Association, 1929.

THE DEAD HAND OF AUTHORITY

MANY years ago, Oliver Wendell Holmes said he had learned three things in Paris: "Not to take authority when I can have facts, not to guess when I can know, and not to think a man must take physic because he is sick." Holmes had been under the influence of the New School of Medicine in Paris, of which Louis was the founder and great representative. Louis abandoned a lucrative practice and "gave nearly 7 years, including the flower of his bodily and mental powers . . . to vigorous, impartial observation." Everyone who thinks, and perhaps especially everyone who writes, knows that the lesson learned by Holmes and passed on by him still needs to be emphasized. No one can deny the great debt which we owe to the Fathers and no one would detract one jot or tittle from their credit, for "it is a sign of a dry age when the great men of the past are held in light esteem." Nevertheless, too many of us are bound by the dead hand of authority.

Religious authority for centuries stood in the way of the advances of medicine. Within the time of practically every reader of this *Journal* authority has denied certain great scientific truths and hindered progress in biology and medicine. The general subject has recently been reviewed in a masterly address,[1] in which

are recalled some outstanding examples of the influence of the dead hand of authority over advance in the medical sciences. We remember the interdictions against the dissection of the human body and the long delay in the most rudimentary knowledge of the body which resulted. Harvey, the discoverer of the circulation of the blood, had to leave Cambridge and go to Padua, but it is said that even he in his later life came more or less under the influence of authoritarian thought. John Mayow (1645–1649) made discoveries concerning what we now call oxygen and its rôle in respiration which would have been revolutionary if carried to their legitimate conclusions. He showed that blue venous blood became red by the absorption of something which he called the "igneo-aerial" particles of the air. Joseph Priestly (1771) made accurate experiments but did not draw correct conclusions owing to the influence of the dead hand. The influence of Stahl (1737), with his doctrine of animism, which was a revamping of vanHelmont's "sensitive soul" as a source of all vital phenomena, is said to have blocked progress in the chemical aspects of physiology throughout the 18th century. It was only when Lavoisier (1775) announced his discoveries that the atmosphere was cleared and many observations "fell into their place, as at the touch of a magician's wand."

It seems to many people that authority still plays too great a part in the ordinary medical education. Much of this is probably due to lack of preparatory education and to the greater or less amount of mysticism with which the ordinary mind endows anything pertaining to medicine. It is true that some professors, unfortunately too few, have the power of developing originality in their students and of inspiring in them a desire for research, but to a great extent this curiosity to unearth basic facts is born and not made, though it can be fostered. There is no doubt that the average teacher could do more than he does to cultivate an open mind controlled by critical judgment. Sir Walter Langdon-Brown holds, correctly we believe, that in spite of the faults which exist in our present system of medical education "every medical school is a guardian for the future of truth." The views of Sir Walter have brought forward other considerations. The writing of textbooks by young and inexperienced men brings about the "perpetuation of accepted views which have not been redissolved and recrystallised from experience."[2] Bad as this is in medicine, it is probably worse, or more frequent, in hygiene and preventive medicine. The market is flooded with such efforts, many of which add nothing to knowledge, and do not even present facts as well as the texts from which they are taken.

What shall we say about preventive medicine? Do not the same conditions apply? We believe so, but to a lesser extent, since public health as we understand it today, is a new development. It is true that the ancient Greeks developed personal hygiene to a high degree and that the Romans were well advanced in public sanitation in the way of baths, abundant water supplies, sewerage, disposal of refuse, and things of that nature, as early as 494 B.C. All of these things passed in the Dark Ages except the control of epidemics. It is also true that the Jewish code of hygiene, as found in Leviticus, was the earliest known and even today is recognized as sound. While isolated studies such as that of the Broad Street Pump epidemic in London (1854) taught sound lessons, the birth of modern preventive medicine may be dated from the researches of Pasteur. In spite of all that bacteriology has done for medicine

and preventive medicine, it seems to have overshadowed some important matters, and in a way has delayed the recognition of the importance of other factors in public health. The deficiency diseases, for example, were perhaps not recognized as early as they might have been. In spite of the progress on which we have good reason to congratulate ourselves, there are still subjects of great importance which are knocking at the door of public health,[3] among which mental hygiene, psychology and psychotherapy are the newest and most prominent applicants. The place of mental hygiene is fairly well established and a recent writer holds that there is even an epidemiology for it.

REFERENCES

1. Sir Walter Langdon-Brown. *Lancet*, Jan. 29, 1938, p. 277.
2. Editorial. *Lancet*, Jan. 29, 1938, p. 269.
3. Editorial. *A.J.P.H.*, Feb., 1938, p. 193.

A CONTRAST

RELIGION and medicine have often found themselves in conflict, especially as to certain rites and observances. The pilgrimages of India are notable in this respect, have cost tens of thousands of lives, and have been the means of spreading cholera over large areas. The number of pilgrims is estimated at 20 million annually.[1] One can imagine nothing more ghastly than the reports of some of these only a few years ago. The sacred Ganges, which is 1,600 miles long, is bathed in as a religious duty by millions, made up not only of those living near its banks, but of pilgrims, and the dead are cast into its waters. Sickening accounts have been written by Hunter, the Bishop of Calcutta, and by Bishop Wilson, among others. At the feast of Juggernaut, the Temple kitchen has the monopoly of cooking for the multitudes. The food cooked there is too sacred for any of it to be thrown away. It undergoes putrefactive fermentation, and within 48 hours is a loathsome mass unfit for human food, yet it forms the chief nourishment for thousands. The housing could not be worse. As many as 80 persons pass the night in lodgings 13 feet long, 10 feet broad, and 6½ feet high. The stench is said to be overpowering, and as many as 90,000 people are packed together for a week in 5,000 of these lodgings. Bishop Wilson estimates the slaughter of one pilgrimage at 50,000, and says that the description given of one might well be used for all the great pilgrimages—at least a dozen. Hunter states that 24 high festivals take place annually at Juggernaut. From the accounts it is not surprising that Bishop Wilson has said that Hindostan "well deserves the reputation it universally possesses of being the birthplace and settled home of the malady."[2]

The contrast showing the introduction of modern medicine is so great as almost to pass belief.[3] Since the whole world is interested in preventing the spread of Asiatic cholera, the Egyptian Maritime and Quarantine Sanitary Council has for 10 years made an annual report to the Permanent Committee of International Public Health at Paris as well as to the health authorities of all the countries interested in the pilgrimages to Medina and Mecca. This festival attracts some 100,000 worshippers. For 1936 the general health was satisfactory and there was an entire absence of infectious diseases. The absence of intestinal trouble is accounted for by the cooler weather. It is particularly interesting to note that this year, 105 people came by aeroplane, and it is

reported that there are indications that this mode of transportation will become more popular.

All of the pilgrims had to submit to vaccination against smallpox and double inoculation against cholera and typhoid fever. The countries of origin have been studied by the Regional Bureau of Sanitary Inspection for the Near East, and so have warnings of any sources of infection. There is coöperation in the carrying out of sanitary measures so that a pilgrim cannot obtain a passport unless he has a medical certificate from recognized authorities stating that he is free of disease. Ships carrying pilgrims are rigorously inspected and a report must be made on the structure of the vessel, accommodation, food, water supply, sanitation, and deratization. No pilgrims are allowed to supply their own food. Food is well prepared by the authorities and must be eaten under sanitary conditions. The camps have electric lighting, incineration, disinfectors, clean kitchens, and clean bedding. At Tor, 16,700 pilgrims were inspected, and examinations of blood, stools, and sputum of all suspected cases made.

This report applies only to the pilgrimage of Hedjaz, which is one of the most important, since it " has, for the last 81 years, been the post of relay of cholera in the rate of progress from the Far East towards the West." [4]

REFERENCES

1. Rogers and Megaw. *Tropical Medicine*, 1935.
2. Harrington, Charles, M.D. *A Manual of Practical Hygiene for Students, Physicians and Medical Officers.*
3. *Brit. M. J.*, Jan. 29, 1938.
4. *Manson's Tropical Diseases*, 1936.

PUBLIC HEALTH EDUCATION*

Education in a Cancer Program—One of the 5 main elements in the Massachusetts Cancer Program is education. Paragraphs describing the education phase of the program are taken from a talk by Eleanor J. Macdonald, epidemiologist of the State Department of Health. This talk was one of the many in which the state program is presented for local application.

In 1936 an order to disseminate knowledge concerning cancer did not suggest as precise a plan of action as a similar order would today. Every possible means of disseminating knowledge was immediately used. The radio, newspapers, and pamphlet distribution were all employed. There were large meetings held at central points to which famous authorities were invited to speak. These meetings were attended by hundreds of people who seemed to be enthusiastic. Although these general educational measures have certain intangible traits in common which make it difficult to measure their effectiveness, it was determined that some method of measuring the effect of these time-consuming educational projects must be evolved. At first, visits were made to physicians' offices in the territory surrounding the location used for one of the large meetings. The physicians were asked if there had been an influx of patients, especially of cancer patients, following one of these lectures, and if they thought that individuals were inspired by what they had heard to take some action. It was found by this means of evaluation that only the briefest flurry of interest was aroused by these meetings which took so much effort.

A second means of evaluating the effect of education became available with the passage of time. This was in the form of information that could be obtained from the cancer clinic records. After 8 years there were enough of these records to form a fair sample on which to base a sound study of the cancer educational situation in Massachusetts. Since cancer, to be controlled, must be treated early, the most important measurement figure to watch is the average period of time that an individual waits after he knows that he has an abnormal symptom before he seeks medical advice. There is another figure that is very important from an educational point of view and that is the average length of time that individuals wait after they have been diagnosed by a physician before they put the recommended treatment into effect. It was found by this study; first, that there was not one individual who did not know he had symptoms of an abnormal nature for a considerable length of time before he sought attention; second, that the time individuals waited from the first appearance of this abnormal symptom until they sought medical attention had not been cut down by a fraction of a month and still averaged more than 6 months; third, that the period of time that individuals waited to put the prescribed treatment into effect after they were diagnosed by a physician was cut in half.

The one redeeming feature of this study indicated that the most promising way to control cancer in Massachusetts was through the family physician. So after the 8 years of usual methods of education, it was deemed wise to introduce a personal type of cancer education. Every individual would have to be given a chance to know exactly what was known and exactly what was not known about this disease. This exact knowledge precisely presented would give confidence which would in turn awaken realization of the need for prompt action.

In 1934, the Division of Adult Hygiene of the Massachusetts Department of Public Health began to organize every one of the more than 350 communities in Massachusetts into Coöperative Cancer Control Committees. Each community is studied first as an individual problem. The census figures reveal the various age groups, the various national groups, and the general population structure. The town directories list the clubs, churches, businesses, and industries. With this material thoroughly understood before the first contact is made, the original individual approaches the community with a fair idea of the size of the problem.

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

The surveyor contacts the board of health and in various ways finds out who the representative citizens in the community are. He has a meeting with these individuals, explains the plan in brief, and seeks advice as to what other individuals have the friendliest contacts in their own groups. Racial, social, fraternal, religious, labor, service, and all groups in the community are represented. The surveyor then has assistants to visit personally all these representatives. Their cooperation is sought, the plan is explained to them briefly, and they are asked to come to a formal organization gathering such as this meeting.

Assembled as we are here to determine how we may best face this problem together, we will again go into this plan. We want each one of you to go back to the group that you represent to ask them to have at least one meeting a year at which cancer is discussed and to which a local physician is invited to speak. The nature of the group determines the type of a talk. Some groups prefer a formal speech and others ask a physician to come in and answer questions. Whichever type of meeting your organization prefers is for them to decide, but in every case plan to have a question period. Do not feel that any question that any individual one of you wishes to ask will be taken lightly or will seem absurd. It has really been felt that the failure of large group meetings to accomplish their end is because their size precludes any possibility of a question period. It is through this question period that the greatest hope lies for controlling cancer. Every community has many of the same ideas. Each community usually has an idea peculiar to itself—"Does aluminum cause cancer?" "Do tomatoes cause cancer?" "Are there cancer streets?" "Is cancer contagious?" "Is it hereditary?" These are some of the questions that every community asks.

Some individuals have wondered what difference it made whether a person thought for example that tomatoes caused cancer. Individuals with cancer have often come to a physician's attention who had delayed beyond the hopeful stage because they thought tomatoes caused cancer and they had abstained from eating tomatoes. While they took an erroneous precaution they had been blind to the possibility of cancer developing in their case. This is one outstanding example, of which there are many, where true and false knowledge has made a difference between life and death.

This community is not being approached while this plan is in the experimental phase. . . . Two hundred sixty communities have been organized. Many of the others are in the process of being organized. The meetings that have been held in this connection within the last 3 years have numbered thousands. There are approximately 4,000 individual committee members who keep in contact with the department all the time on this subject. The number of meetings being held each year varies all the way from more than 250 in Cambridge to the 3, representing the whole community, in Monroe Bridge.

In many places these small groups have their meetings, notify the central committee, who in turn notifies the department of public health without any prompting from the central committee. Other communities find that the individuals representing certain parts of the population have to make an occasional visit or call to the clubs in those groups to make sure that a meeting is held. Printed post cards with spaces to fill in the following information—the name of the club, the date of the meeting, the number present, the physician speaking, and any remarks which the group thinks would be of interest in the main office, have been placed with this committee. . . .

After every community in the state is organized, we are going to start all over again and see if we can reach those individuals who might have been missed in the first organization because they were not affiliated with any club or any group. . . .

The Income of the Audience—Family income, of course, affects much more than the status of medical care. It sets many factors which have to do with the acceptance and application of health instruction.

These paragraphs merely direct attention to the 3 year study of how American *native born* families make their living and spend their money. The study has been made by the Bureau of Labor Statistics, Dept. of Labor, and Bureau of Home Economics, Dept. of Agriculture, in 51 cities, 140 villages, and 64 farm counties. Some 285,000 families figure in the final returns.

Several pages of charts accompany an explanation of the study as reported in *Business Week*, 330 W. 42d St., New York, N. Y. April 9, 1938. *20 cents.*

A "family" consisted of at least a husband and wife . . . who had been married at least a year . . . are living in housekeeping quarters . . . and were both born in the United States. The status of the foreign born was left for another study.

Of the families studied in cities of 200,000 to 300,000 population: 27.6 per cent were on relief or had less than $1,000 annual income; 39.3 per cent between $1,000 and $2,000 income; 23.7 per cent between $2,000 and $3,000; 14.9 per cent had $3,000 and over.

Of the families in cities of 30,000 to 70,000 the proportions were: 35.4 per cent under $1,000; 39.8 per cent, $1,000 to $2,000; 16.2 per cent, $2,000 to $3,000; 8.6 per cent, $3,000 and over.

These samples will suggest the significance of one phase of the study which was made primarily for use by business executives in laying out merchandizing plans.

The Uncounted Radio Audience—Much is said about the measurable radio audience. Broadcasting companies, research organizations, and radio followers submit a mass of more or less convincing data.

But *Business Week* (May 28, 1938) reviews the differences between the commonly accepted Crossley and Hooper reports, and the further differences by test check-ups made by a few advertisers.

B.W. quotes a leading commercial advertising director:

> "We have not at the present time discovered the ideal method for gauging accurately what we buy when we buy radio, so far as circulation is concerned."

Business Week, 330 W. 42d St., New York, N. Y. *20 cents.*

To Quote and To Be Quoted—We have urged that quotable material appears in monthly bulletins and elsewhere. In response one editor has asked for suggestions.

The main idea is to note good stuff as it appears in various bulletins and other publications, and to help give it a larger audience—and make it do a bigger job. This has been the policy of several editors of state and local bulletins.

The companion big idea is to write something of your own now and then that other editors will wish to quote for the benefit of their readers. Needless to say, permission should be asked and credit given in every case.

"Where They Can Learn"—Under this heading *Business Week* (May 28, 1938) editorializes on the subject of public relations for business and industry. "Where they can learn" would be "a seminar or study group of not more than 15 or 20 searchers."

Public relations for health agencies calls for a similar approach. Health education on behalf of the organizations, as well as education in health practices of individuals and families could be furthered by such a group—or several groups.

The most experienced among us could jointly tackle some of the many perplexing problems. The experienced ones would be all the better equipped through such a procedure. The less experienced should be helped far beyond the expectations of pessimistic executives.

Not a 3 day institute with a crowded program, and competing distractions can serve the purpose. But a full week quite apart from any convention, and preferably away from a "big city." A week would be a modest minimum. A month would be all the better. However, several one week tests would show the way such a group might go.

Will executives and practitioners alike comment on this suggestion?

SPECIAL EDITIONS

The first of the new crop of newspaper health magazine supplements comes from New Haven, Conn. The "Better Health" edition of the *New Haven Sunday Register* is dated Feb. 27, 1938, and covers 36 pages. Among the features are a symbolic cover page; a page carrying facsimile letters from the Mayor of New Haven and the Governor of Connecticut, accompanied by portraits, and the Inter-Chamber City Health Conservation award to New Haven; the illustrated Diabetes Historical Landmarks (New York City Health Dept.); "Personal Health Aided by Books," by the Public Library readers' adviser; "Spider Web of Syphilis" (illustrated diagram); "The Medical Practitioners of Little Old New Haven" (sketches going back to 1645); "Old Time Nostrums Made It True, 'Cure Is Worse Than Kill'"; and so on. There are numerous illustrations, with some readable captions. For a copy send *10 cents* to Paul H. Stevens, public information assistant, Health Department, New Haven.

Special health editions of Hertford County Herald and Jackson News of Northampton are mentioned in North Carolina's state *Health Bulletin*. Local health officers participated in both cases.

Winston-Salem's *Journal and Sentinel* came out May 1, 1938, with a child welfare section of 8 standard pages. Numerous illustrations, nearly all being local scenes or subjects.

MAGAZINE ARTICLES

"Have They Died in Vain?" by H. Krieghbaum. *Survey Graphic*, 112 E. 19th St., New York, N. Y. May, 1938. *30 cents*. Status of food and drug legislation. Letter from mother of a sulfanilamide victim as the appeal.

"Leaves from a Surgeon's Casebook," by James Harpole. (Stokes, New York). Condensed in *Book Digest*, 350 E. 22d St., Chicago, Ill. May, 1938. *25 cents*. Records "the rapid progress which medical and surgical science has made."

"Medical Superstitions," by Dr. Morris Fishbein (a page of pictures); "150,000 Childbirth Tragedies" and what government is doing about it (4 picture pages). *Look*, Des Moines, Iowa. May 10, 1938. *10 cents*. More nation-wide health education.

BOOKS AND REPORTS

Lectures on the Control of Syphilis and Other Infectious Diseases—*By Thorvald Madsen, M.D. Baltimore, Md.: Williams & Wilkins,* 1937. 216 pp. Price, $3.00.

Dr. Madsen's book consists of 5 lectures given as the Abraham Flexner series for 1937 at Vanderbilt University. The series includes addresses on widely diversified subjects, and reflects the broad range of the author's learning and experience.

The first lecture deals with venereal disease control in Denmark, a topic already somewhat familiar to public health workers in this country. Treatment for syphilis by compulsion began in the 18th century in certain parts of Denmark and at its inception was strongly opposed. Later the public began to understand and with the cooperation of the clergy the necessity for syphilis treatment became recognized and accepted. Dr. Madsen believes that the underlying factor in the relatively satisfactory condition in Denmark as far as venereal diseases are concerned is expedient and adequate legislation that gives easy access to free treatment. The present excellent facilities for diagnosing and treating syphilis at public expense are described. The reproduction of the serological test record of a Danish patient will be of special interest to those engaged in syphilis control.

The "Mechanism of Bacterial Infection" is the subject of the second lecture. Numerous experiments at the Danish State Serum Institute are reviewed, most of them involving the administration of organisms of the salmonella group to animals and tracing the course of the bacteria administered by means of pathological and bacteriological examinations at stated intervals after the initial dose. Besides organisms of the salmonella group, *B. abortus* and the tubercle bacillus were used. The studies make it appear that when organisms are given by mouth the route of infection is always the same. Direct infection of the blood stream from the intestinal tract has never been demonstrated. Organisms pass from the intestinal tract to the regional lymph glands, and thence through the lymphatics to the thoracic duct, and to certain organs, particularly the liver and spleen. Organisms reach the blood stream through lymphatic channels, and in many infections the presence or absence of bacteremia seems to depend upon phagocytosis, especially in the liver and spleen, rather than upon any bactericidal powers of the blood.

According to Dr. Madsen's third lecture, the cost can never keep a tuberculosis patient in Denmark from being treated properly. There are two sanatorium beds for each annual death, adequate diagnostic facilities, and facilities for extramural X-ray and pneumothorax services. Americans who realize the social and economic implications of tuberculosis will appreciate the provisions of Denmark Social Care Acts. These laws provide for giving needy tuberculosis patients and their families full maintenance during the first 3 months after the discharge of the patient from a sanatorium.

Dr. Madsen gives the results of tuberculin testing in various localities, and of experimental studies of the same nature. There are many authorities who would not agree with his statement that "it seems an established fact that,

except cases of a quite new infection, the tuberculin-positive are better protected against subsequent infections than the tuberculin negative." Also, many health officials may question Dr. Madsen's belief that there are good reasons for advocating vaccination by the Calmette-Guerin method.

"All born in northern climates can speak of the effects of the yearly change on our condition and from antiquity months of the year have been associated with diseases." Dr. Madsen in this fashion takes cognizance of common experience in his lecture on the influence of seasons on infection. He then cites numerous examples of seasonal distributions of disease. Taken for the most part from the unusually complete Danish morbidity records, these examples are striking in that they include seasonal distributions for such diseases as gastric ulcer, impetigo, erythema multiforme, and other conditions for which occurrence by months is seldom recorded. Dr. Madsen reviews experimental observations on the possible relationship of light, vitamin deficiency and other factors to seasonal distribution, and closes his lecture with emphasizing the fact that the health officer must be familiar with seasonal fluctuations in his own community. He must also determine the cause of an unusual rise of any disease out of season.

The last lecture is on whooping cough. Statistical data from several countries are presented to show that whooping cough is one of the most fatal of the acute infections of children. In spite of this, it is assuring that the trend of mortality has been downward over a period of years in most countries. As shown by data from many localities, the proportion of older children surveyed who give histories of whooping cough is very large. The disease causes much loss in absence from school and may be followed by physical and psychic troubles of long duration.

Dr. Madsen accepts Bordet-Gengou bacillus as the cause of whooping cough, and states that facilities for diagnosis by the cough plate method have been established at the Serum Institute. On the basis of frequent cultures during illness, it has been found that organisms are few by the 4th week after the first paroxysm, and it is considered safe to readmit children to school on this basis. During experiments with whooping cough vaccine on the Faroe Islands, the mortality in the vaccinated group was one-sixteenth that of the unvaccinated, and cases among the vaccinated were mild and of short duration. Whether these results were due to specific immunity, or to nonspecific immunity lasting only a few weeks after injection was not decided.

GEORGE H. RAMSEY

Milk Control: Governmental Regulation of the Dairy Industry in the United States—*Prepared and published by the American Municipal Association. Chicago*, 1937. 49 pp. Price, $.75.

The principal steps taken by federal, state, and local authorities to regulate this important industry for consumer protection are reviewed and the developments necessary further to purify milk in every section of the country are examined and explained. Four out of every five communities with population over 1,000 to 10,000 do not regulate the conditions of production or distribution of milk. Less than 40 per cent of the milk consumed in such communities is pasteurized and little or no attempt is being made to urge producers to pasteurize milk before they use it in their own homes. With bovine tuberculosis practically eliminated, Bang's disease in cattle (one of the causes of undulant or Malta fever) and mastitis (which causes the secretion of abnormal milk) still need to be brought

under control. More accurate reporting of milk-borne infections is needed. Under our system of state and local government, milk regulations naturally are not uniform throughout the United States, and this lack of uniformity continually offers reason to those who believe in efficient government from above to urge federal and state regulations. The general approach used in this review is one that supports federal and state control with consequent suppression of municipal and community initiative.

This pamphlet discusses in some detail the attempt to standardize regulations through the use of the model milk control ordinance which has been developed since 1923. It states that many communities have adopted the model ordinance, but does not point out the fact that this type of standardization may be carried out in such a way as to repress new developments. The review also fails to call attention to the fact that communities, *e.g.*, New York City, that have efficient milk control based on other types of regulation do not receive recognition for their work in the published records issued by the federal authorities urging the model milk ordinance.

Little recognition is given in this pamphlet of the fact that the enforcement of any ordinance designed to control the quality of the dairy products should be based on a laboratory examination of the product whose quality is to be controlled as well as an inspection of the sources of supply and processing plants. Thus, there is only incidental mention of the report on *Standard Methods of Milk Analysis* which has been developed under the auspices of the American Public Health Association.

Nevertheless, the pamphlet issued by the American Municipal Association summarizes so much information of value that everyone interested in the important question of the sanitary quality of our dairy products should have a copy. ROBERT S. BREED

Health Section Report, World Federation of Education Associations—*Seventh Biennial Conference, Tokyo, Japan, August, 1937. Available from the Health Section Secretariat, 200 Fifth Ave., New York, N. Y.* Price, $1.00.

This report gives the proceedings of the conference held in Tokyo in August. Dr. C. E. Turner, Chairman of the Health Section, and Sally Lucas Jean, Secretary, planned a program to which representatives of 15 nations were welcomed. Present membership in the section consists of 200 groups in 26 countries. Health information is sent by regional correspondents to the secretary in New York. From here it is disseminated in answer to inquiries from other countries. Dr. Turner emphasizes the fact that the section is not interested in standardization, but in learning the best experience of all countries and helping its members to benefit therefrom.

The report is very interesting and readable. Perhaps its most important lesson for us is that there are "many ways to skin a cat" in public health work. It is well for us to bear this in mind since we are often inclined to be intolerant of others whose methods differ from our own but whose results eventually are as good. Discouraged rural public health workers in this country may take heart from reading the reports from Punjab and from Egypt. Self-satisfied health workers may find new worlds to conquer by reading the reports from Hawaii, the Philippines, and Japan. The Chinese delegate reports a number of inherent obstacles in his country, among them the fact that medical education in China has been taken from overseas and most teachers in medical schools

do not see the relation between education and keeping healthy. Where have we heard that before?

It is evident that the educational abilities of the public health nurse are being recognized and utilized in other countries as well as our own. With the exception of Japan, each country reporting speaks highly of her values. It is also evident that the United States is not unique in befogging the public health field with many activities only indirectly related to health. Thus, the papers contain discussions of gymnasia, sports, military training, morals, baby contests, community singing, religion, and philosophy. Many countries appear to be farther advanced in attention to teachers' health than this country. One searches through the report in vain for definite proof that the elementary school health program is resulting in lessening the incidence of physical defects among college students and those entering industry. The Junior Red Cross appears to be a potent influence in health matters in many countries.

Teacher training, physical education, special schools, the part of the physician, the nurse, and the teacher, the relationship of the home and school, sight protection, dental health education and service, and physical examination of college students are discussed at length. This volume should be of interest to public health and school personnel. It should inspire readers with a renewed desire to help improve the health of children whatever their nationality. W. P. SHEPARD

The Foundations of Nutrition—*By Mary Swartz Rose (3rd ed.) New York: Macmillan,* 1938. 625 pp. Price, $3.50.

This is a welcome revision of a much used text in college courses in nutrition. The organization is fundamentally the same as in the earlier editions, but each topic has been rewritten in the light of recent discoveries in the field, and all tables have been revised.

The subject matter is selected and presented for those who wish to gain a knowledge of the significance of food so that they may "live more intelligently." In the 26 chapters the author presents very simply and clearly some of the basic principles of human nutrition and makes practical application of these principles to the feeding of individuals or groups of individuals. Special attention is given to the discussion of dietary essentials—energy, protein, the ash constituents, vitamins, and water; of the contributions to the diet of various types of food materials; and of the construction of adequate diets. The appendix comprises 9 compact tables which include height-weight-age tables for children and adults; detailed information on the energy cost of activities; plans for constructing adequate diets for persons of various ages and conditions; and data on the nutritive value of food in terms of "shares." From these tables the nutritive value of any diet can be calculated easily.

The discussion of energy, including the need of the body for energy, the energy requirement of adults and children, the methods of measuring energy production, and the effects of a shortage or a surplus of calories, has been little changed. The results of recent researches have been incorporated in the discussion of proteins, vitamins, and minerals. Liberal use is made of photographs, tables, and charts to illustrate and emphasize the points under consideration.

Having presented the fundamental facts concerning the dietary essentials, the author points out the contributions of these factors made by the different foods. The foods are grouped on the basis of their similarity in nutritive properties. These groups serve as a

foundation for the planning of diets to meet the daily requirements. The construction of adequate diets for children of various ages, for adults of different occupational groups, for families on different income levels, and for the mother and baby are given careful consideration.

In its revision the book has lost nothing and has gained much that is of value. Subject matter, tables, dietaries, and references have been brought up to date and much new illustrative material has been added.

VIRGINIA BATIE WHITE

Standard Business Etiquette—*By J. George Frederick. New York: Business Bourse,* 1937. 188 pp. Price, $1.75.

Executives and staff members are concerned with how to do things together—how to get things done through right personal relations. To that end we have this book presenting "personal codes for smooth-running organization efficiency."

There are chapters on being "business-like," on using the telephone, on conferences, and chapters for private secretaries, for reception clerks, and for executives and employers. Any one of these chapters makes the book worth the price to a health agency. They are practical and "business-like."

The book first claimed our interest through the chapter on the business conference, in view of many weary hours spent "in conference." Addressed to business groups, yet largely this chapter is applicable to health agencies. Studied and practised, these 14 pages would help to make staff conferences interesting, and actually an important factor in administration. And the 25 rules with comment should retrieve countless conference-hours now grimly endured without hope of fruitful results.

At least take a chance, and ask the publisher to send a copy on approval.

EVART G. ROUTZAHN

Dairy Bacteriology—*By B. W. Hammer, B.S., M.S., Ph.D. (2nd ed.) New York: Wiley,* 1938. 482 pp. Price, $5.00.

The author is eminently qualified by experience, accomplishments, and insight to write a book on dairy bacteriology. In this revised edition the newer phases of dairy bacteriology have been incorporated and the book brought up to date in every respect. He again emphasizes the fermentations taking place in milk and its derivatives, since an understanding of these is essential not only to the student and the practical bacteriologist but to any one responsible for the quality of dairy products. Material selected from the leading dairy bacteriology departments in the country makes the book a source of valuable information.

Beginning with the fundamental chapters on bacterial determinations of milk and milk fermentations, there is a comprehensive and authoritative discussion which leaves in the mind of the reader a picture of the difficulties met with in the manufacture of dairy products of high quality. The basic facts underlying the practice of such production are clearly presented.

The chapters on contamination of milk and cream and its control, and the destruction of microörganisms are particularly well presented. The book is not a mass of theory on controversial subjects but of technical and practical knowledge usable by those responsible for the quality of milk and milk products.

The make-up and printing are excellent. The first edition at once took its place as a standard. This second edition maintains the high character of the original and the book will doubt-

less keep its place as one of the most authoritative and useful in its field.

R. G. MCCARTY

Fit To Teach: A Study of the Health Problems of Teachers—*Ninth Year Book, Department of Classroom Teachers, National Education Association, Washington, D. C.*, 1938. 276 pp. Paper. Price, $1.00.

Here is a report, with interpretation and the application of the data, along with a health manual for the classroom teacher. The basic material is drawn from 5,000 questionnaires from classroom teachers, and several hundred from school physicians, superintendents, principals, and teachers' associations.

A chapter asking if teachers are healthy (reviews the nature of teachers' health disorders) is followed by the personal health practices of teachers (the diet section being prepared by Mary S. Rose and Clara M. Taylor). The mental health and the spiritual health of teachers, and the school environment are presented. Factors outside the school, and community responsibility in the promotion of teacher health are discussed. Considerable importance is attached to health promotion by teachers' professional organizations, and in the pre-service training of teachers. Good health as a prerequisite for certification, and as a factor in employing teachers, is emphasized.

The questionnaires, duplicated in the appendix, might well be used in further local studies, and as checklists for administrators and individual teachers. Civic and health workers concerned with the health of teachers and health teaching by teachers cannot afford to overlook this volume.

EVART G. ROUTZAHN

Let's Grow and **Let's Stay Well**—*By Mary L. Hahn and Charles-Edward Amory Winslow, Dr.P.H. New York: Merrill*, 1938. 186 and 184 pp. Price, $.72 each.

Let's Grow and *Let's Stay Well* are the Third and Fourth grade books, respectively, of the New Healthy Living Series by these authors. They are designed to meet the major objectives of health instruction in these two grades. The type used is easy on the eyes. The chapters average 8 pages each. The material used aims at maintaining real child interest in the true-to-life experiences of the children in the books. The health program presented is definite and complete. Emphasis is placed upon good health rather than upon sickness.

W. W. PETER

Health—*By C. E. Turner, Dr.P.H., Sc.D., and Georgie B. Collins. Boston: Heath*, 1937. 231 pp. Price, $.72.

Cleanliness and Health—*By C. E. Turner, Dr.P.H., Sc.D., and Georgie B. Collins. Boston: Heath*, 1937. 236 pp. Price, $.80.

According to the publisher's blurb there are "one hundred forty-six health habits, fundamental to physical and mental health"—a number sufficient to stimulate many authors to writing text or guide books for teachers who otherwise might omit stressing some or get all confused.

Both of these books are revisions. *Health* for grade V and *Cleanliness and Health* for grade VI. The method followed by the authors is quite in contrast to *Let's Grow* and *Let's Stay Well* by Hahn and Winslow. The former books might be edited stenographic records of interesting health talks; the latter employ dialogue chiefly.

W. W. PETER

Intensive Rural Hygiene Work in Netherlands India—*Public Health Service of Netherlands India. Batavia, Java*, 1937. 170 pp., 144 ill.

This book is much more than a de-

lightful report of outstanding public health work; it is a philosophy of public health expressed in terms of successful experience. From a recent visit to Java, the reviewer can certify that the accomplishment and philosophy expressed are fully borne out in the splendid work being carried forward by the Dutch Colonial Service.

The intensive rural hygiene work described is essentially a program of sound, practical, constructive health education applied to rural sanitation, and especially to hookworm control. It is succeeding much better than did sanitary ordinances or curative medicine. The philosophy, or point of view, upon which it is based may best be expressed by a few selected sentences from the book itself:

> An attempt to carry out hygienic measures by beginning with the use of force gives rise to active and passive resistance . . . Medical care can be carried out by a central government organization, a local government organization, a society et cetera, but it should not be included in the program of a public health service . . . The teaching of hygiene cannot be based efficiently upon medical care, but should be based upon educational measures . . . Medical care and hygiene work concern such different fields of activity that for efficient work there should be a different subordinate personnel for each field wherever this is possible . . . Those who have once worked with activities that concern medical care will not willingly give up this attractive care of the sick which is satisfying to them to carry on hygiene work which is much more difficult and the results of which cannot be seen immediately, but will be secured much later. For this reason pure hygiene work is nearly always postponed. Medical care is much easier than hygiene work, it is more attractive, the results are immediately seen, the patients come to the doctor, and everything runs more smoothly than with hygiene work . . . The people must seek their health not in clinics or hospitals, but must try to find it in hygienic habits and hygienic surroundings.

Detailed descriptions of the health education procedures are presented and the plentiful illustrations charmingly depict the health education methods and also the habits, problems, living conditions, and accomplishments of the Javanese villagers.

The delegates from Indo-China at the recent Rural Hygiene Conference in Bandoeng were so impressed with this work that the book is now being translated into French.

Every health educator and every health officer would be challenged and stimulated by this book. Inquiry has revealed that there are a few hundred copies of this report still available to professional workers who are really interested in the problem. Requests should be sent to the Director of the Public Health Service of Netherlands India, (Dienst der Volksgezondheid) Parapattan 10, Batavia-Centrum, Java, N. I. C. E. TURNER

Tuberculosis Among Children and Young Adults—*By J. Arthur Myers, Ph.D., M.D. (2nd ed.) Springfield, Ill.: Thomas,* 1938. 401 pp., 71 ill. Price, $4.50.

The first edition of this book appeared in 1930 and now, 8 years later, the author has drawn on his added, rich experience and the multitudinous, valuable contributions that have been made to the literature on the subject of tuberculosis among children and young adults to bring together into one compact volume the latest information on the diagnosis, treatment, and prevention of the reinfection type of pulmonary tuberculosis.

Beginning with an account of the results of recent research in the field of tuberculosis control, including Purified Protein Derivatives, X-ray, Sedimentation Rate, Animal Experimentation, Epidemiology, Sociological considerations, sanatorium treatment, etc., the author then devotes a chapter to sensitization and immunity, discussing the effects of sensitization, the detection of sensitiveness, the dangers of a high degree of sensitization and the

significance of the negative tuberculin reaction in persons who have been exposed to an open case of tuberculosis for a comparatively long period of time.

Concerning immunity to tuberculosis Dr. Myers summarizes the 6 pages of discussion as follows:

> Attempts to produce immunity in various animal species have brought about a wide range of results. Therefore, it does not appear safe to draw conclusions concerning the immunizing effect of tuberculous infection in man from the results obtained in any one animal species. The incidence of disease in the various races is not an index to immunity. The best test of the immunizing effect of the first infection type of tuberculosis is made by observing what actually happens among groups of children who have developed this type of disease. Wherever such observations have been made over a sufficiently long period of time, the results are very discouraging to those who would like to depend upon immunity for protection against clinical tuberculosis.

Tuberculosis in Infancy, Tuberculosis in Childhood, and Tuberculosis Among Young Adults, are the principal subdivisions of the book. The chapters have been prepared carefully and with an eye to an orderly presentation of the facts. Contributing authors have written the chapters on Tuberculous Meningitis, Tuberculous Disease of the Bones and Joints, and Chronic Nontuberculous Basal Pulmonary Diseases in Childhood.

Especially valuable are the summary and bibliography at the end of each chapter. No effort has been spared in presenting as exhaustive a compilation of modern references as possible, and this feature should make the volume an important addition to the technical libraries of all persons interested in tuberculosis in children and youth. The index is unusually complete.

BERNARD S. COLEMAN

Pulmonary Tuberculosis in Practice—*By R. C. Wingfield, B.A., M.C., B.Ch., F.R.C.P. Baltimore: Wood,* 1937. 122 pp. Price, $2.50.

This book, as we are told in its preface, is intended

> . . . to bridge the gap between the practitioner and the specialist. An attempt to show the senior student and the young practitioner that if he will approach tuberculosis from a new and simpler angle he can study the disease in his practice and that with only a broad knowledge of those parts of the diagnosis, assessment and treatment, that must of necessity call for the specialist's skill, he can really take a hand in the treatment of his cases and need no longer drop them like hot coals as soon as they are diagnosed.

The author has undoubtedly had broad experience in the management of tuberculosis and the present volume is a direct result of his intimate acquaintance with actual needs of practitioners with whom he has had contact. The text is most interestingly presented; the arrangement of the material follows closely and in careful detail the train of events along their various courses from the primary tubercle to complete healing or to massive cavitation. The chief diagnostic aid is the roentgenogram. The method of classifying lesions is the author's own; in America we cannot feel this to be superior to the classification of the American Association. His idea that allergy is not a manifestation of immunity will probably be changed as he studies this part of the problem more closely. We cannot agree that an ischio-rectal abscess should ever be poulticed and think the book would have made more friends if this section had been omitted.

These comments are trivial compared with the wealth of information this volume contains. Anyone concerned with the clinical management of pulmonary tuberculosis will find it profitable and interesting reading. It is profusely illustrated with cuts made from roentgen ray pictures and especially by a large chart showing graphically the important stages in the development of tuberculous lesions of the lung.

Supplementary chapters discuss: "The Mantoux Reaction" (apparently the author does not know about P.P.D.), "Haemoptysis," "Pleural Effusion," "Ischio-Rectal Abscess," "Spontaneous Pnemothorax" and "Tuberculous Laryngitis."

A. P. HITCHENS

Fifty Years a Country Doctor—*By William N. Macartney. New York: Dutton,* 1938. 584 pp. Price, $3.50.

Only the other day I was reading an article of the kind now all too common, dwelling on specialism in medicine as well as in doctors, and claiming that the family doctor had passed from the picture, leaving would-be patients confused and unhappy.

The first page of this excellent book combats the idea that the general practitioner is passing or has passed and that the day of the specialist has arrived. It claims that two-thirds to three-fourths of the population are still treated by their family physicians and says, "The species is a long way from extinction; they are a hardy breed and will survive." There is no doubt that many people will be glad to know this. Certainly we owe more to the country doctor than we can ever repay. It is well to remember that Marion Sims, McDowell, Drake, and a host of others who have added much to our medical history were country doctors.

The book before us is extremely interesting, a good story of a useful life, well written by the best type of country doctor. Autobiographies are always interesting when they are sincere. The story of Dr. Macartney is not only sincere but is filled with a kindly philosophy tempered by a shrewdness evidently due to the Scotch-Irish descent which he claims. Further than this, it gives us a picture of a number of the great men whose names are household words in American medicine, such as Loomis, Draper, Witthaus, Gaillard Thomas, Austin Flint, Sr., Phelps—and perhaps of greatest interest to the readers of this *Journal*—Stephen Smith, the founder of our Association.

Almost every page gives some amusing incident, many of which are credited to certain characters who are perhaps more or less composite but who the author assures us actually were friends of his. We are quite prepared to see some of these—Uncle Eph, Si Perkins as well as Si Perkins's wife, and Dr. Jenkins—become well known characters.

We commend this book heartily from every standpoint, and hope for a long survival of the type of country doctor illustrated in the life of the author.

MAZŸCK P. RAVENEL

Personnel Policies in Public Health Nursing—*By Marian G. Randall. New York: Macmillan,* 1937. 170 pp. Price, $2.00.

This book should be in the hands of every public health administrator, director of nursing bureau, and director of a public health nursing agency. The material discussed is based on a study made of personnel practices in 59 official agencies. Every chapter is full of meat for those interesting in improving personnel and the conditions which make for their well-being.

The author throws out a challenge in the introduction by stating: "At present the need for *qualified personnel* is still the *major administrative problem* of public health." Later she says "standards are maintained and improved by the efforts *from within the profession* or group." This follows the recommendation that a nursing advisory committee be appointed in each community to assist the Civil Service Commission in setting up standards, etc.

The most encouraging item in the book is the comparison of the preparation of public health nurses in official agencies today with that of those in-

cluded in the study made by the National Organization for Public Health Nursing 6 years ago. In addition to the tables giving this comparison, the author points out that approximately two-thirds of all directors and one-third of all supervisors have college degrees; nearly three-fourths of the directors and over three-fourths of the supervisors have public health nursing certificates, and the percentage of field staff having certificates has more than doubled in 6 years.

What is not generally understood by many boards and some officials is the fact that staff nurses working without supervision need more academic and professional experience—not less—than those with supervision. This study indicates for the total group that the higher salaries paid to public health nurses are in direct relation to higher education, both professional and academic. Several health officers and nursing directors said they would like to have salaries based on efficiency but had not devised a practical method of putting this into effect because of rating difficulties. It is encouraging that there is a trend toward increasing the probationary period used in many agencies from 3 months to 6 months, and the recommendation is made that where possible, a year be considered.

An important point brought out in connection with dismissal policies is that careful records of work and reports of agencies should be made out periodically for every nurse on the staff. These reports should also show that the records have been discussed with the nurse. In connection with the promotion policies, although length of service is the usual basis upon which promotions are made, it is generally agreed that an objective rating of services and promotion based on efficiency are more satisfactory to both the organization and the worker.

Excellent data have been made available in regard to health examinations, citizenship, age, personality, hours of work, vacations, leaves of absence, retirement, pensions, and insurance. In fact, this book based upon a field study of personnel practices in various parts of the country is full of valuable information for the administrator in public health nursing, and its recommendations, presented in the fore part of the book, are a challenge to us all.

MARGUERITE WALES

Methods of Analysis for the Butter Industry—*Edited by J. C. Fridenberg. Chicago: American Butter Institute,* 1937. 48 pp. Price, $1.00.

A laboratory manual is of value only in so far as its procedures are accurate, reasonably simple, and relatively inexpensive to conduct. This loose-leaf booklet adequately satisfies these conditions not only for the butter industry but also for food and dairy inspectors, laboratory workers, and even consumers.

The book is divided into 10 sections, each devoted to a phase of analysis. In addition to notes on sampling and methods for the determination of quality and composition of butter, the manual contains fat, sediment, and acidity tests for milk, skim milk, and cream. One section is devoted to the determination of diacetyl and acetylmethylcarbinol (the flavor factors) in butter and butter starters. A practical method for determining the keeping quality of butter is also presented. The last section of the book outlines methods for checking those acidity and salt test solutions which are subject to variation. An ever useful temperature conversion table is also included.

The methods outlined in this manual are those which are used by the American Butter Institute's Laboratory and may well be considered sufficiently accurate and simple for most routine semi-official butter tests.

C. R. FELLERS

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Measles Statistics—Current measles incidence is the highest on record, but it is declining. Highest incidences were reported in the east, north central, and east south central regions, where the disease was more than 4 times the seasonal expectancy. Useful graphs.

ANON. Prevalence of Communicable Diseases in the United States. Pub. Health Rep. 53, 19:747 (May 13), 1938.

For Hot Weather Vaccinations—Research is reported which leads to the recommendation that vaccine virus propagated on chick membrane be dried, ground, and diluted with serum to make it resistant to the heat ordinarily encountered in hot weather, which so often inactivates ordinary saline diluted virus.

BUDDINGH, G. J. The Use of Serum as a Protective Diluent for Vaccinia Virus. Am. J. Hyg. 27, 3:530 (May), 1938.

The Slaughter of the Tonsils—Among 8,758 white families in 18 states, a surgical operation rate of 65 operations per 1,000 persons per year was reported. Highest rates were found in the 5–9 and 30–34 year age groups, the first for tonsillectomies, the second for female genital and puerperal conditions. Tonsillectomy accounts for a third of all operations, setting fractures stands second, and appendectomy third. Significant sex differences in various operations are recorded.

COLLINS, S. D. Frequency of Surgical Procedures Among 9,000 Families, Based on Nation-wide Periodic Canvasses, 1928–1931. Pub. Health Rep. 53, 16:587 (Apr. 22), 1938 (or) Milbank Quart. 16, 2:123 (Apr.), 1938.

Some Meditations on Tuberculosis—In New England female tuberculosis death rates exceeded the male until about the end of the last century: since that time the male rates have been in excess. In the South, mortality has been consistently higher among men. Whatever has affected the rate among young children has affected each sex about equally. The more rapid decline among adult females may be due to the fact that women being largely employed in household duties have responded more quickly to better living conditions than their husbands.

DAUER, C. C. Sex Differences in Trends of Tuberculosis Mortality. Am. J. Hyg. 27, 3:538 (May), 1938.

Frequency of Disabilities—Over a 5 year period disabling illnesses and non-industrial accidents of 8 or more days' duration occurring in a large group of white male employees were recorded. The annual rate per 1,000 was 132 (when adjusted for age, 124). In this study you will find some important records of duration of illness, incidence, distribution, etc.

GAFAFER, W. M. Frequency of Sickness and Non-Industrial Accidents Causing Disability Lasting Eight Calendar Days or Longer Among 60,000 White Male Railroad Employees, 1930–1934 Inclusive. Pub. Health Rep. 53, 15:555 (Apr. 15), 1938.

Disulfide Poisoning—To the list of industrial health hazards must be added carbon disulfide poisoning. Viscose plants manufacturing rayon use the chemical, as do some rubber manufacturers. As a minimal standard of

safety an atmospheric concentration of 10 p.p.m. is suggested.

GORDY, S. T., and TRUMPER, M. Carbon Disulfide Poisoning. J.A.M.A. 110, 19: 1543 (May 7), 1938.

For V. D. Clinicians—British findings that sulfanilamide will clear up chancroid quickly.

HANSCHELL, H. M. Sulfanilamide in the Treatment of Chancroid. Lancet. 1, 16:886 (Apr. 16), 1938.

Brucellosis Incubation Periods—Most observations of the incubation period of undulant fever have indicated 14 days as the usual, with 3 to 20 days as the extreme limits. Experimentally induced infections increased the limits to 28 to 35 days. Study of 17 city cases infected by drinking contaminated milk in the country reveals incubation periods of from 1 week to not less than 4 months.

HARDY, A. V., *et al.* The Incubation Period of Undulant Fever. Pub. Health Rep. 53, 20:796 (May 20), 1938.

Whooping Cough Prophylaxis—One dose of alum-precipitated pertussis vaccine was given to a group of children. A control group and the treated children were watched for a year. Reactions following immunizations were negligible. Fewer cases of whooping cough occurred among the treated than the control children and attacks were milder. The experience indicates that larger doses of the antigen should be tried.

HARRISON, W. T., *et al.* Prophylactic Value of a Single Dose of Precipitated Pertussis Vaccine. Pub. Health Rep. 53, 20:793 (May 20), 1938.

Better Measles Prophylaxis—Globulins recovered from adult serum proved effective in preventing development of measles in exposed children. The prophylactic is urged for further trial, for it produced no reactions, the amount to be injected is small, and the supply unlimited.

KARELITZ, S. Prophylaxis Against Measles With the Globulin Fraction of Immune Human Adult Serum. Am. J. Dis. Child. 55, 4:768 (Apr.), 1938.

Starting from Scratch against Polio—How little we know about the cause, treatment, and prevention of poliomyelitis is told with openmindedness and with complete frankness. Especially in preventive knowledge are we woefully wanting.

LUMSDEN, L. L. Poliomyelitis: Facts and Fallacies. South. M. J. 31, 5:465 (May), 1938.

Decibels and Deafness—Excessive noise impairs the efficiency of workers by affecting hearing, producing fatigue and neuroses, and interfering with sleep. Noise can be measured and rough standards of safety established. Air conditioning tends to reduce outside noises, some inside noises may be eliminated at the source, and there are measures by which the individual may protect himself.

MCCORD, C. P., *et al.* Noise and Its Effect on Human Beings. J.A.M.A. 110. 19:1553 (May 7), 1938.

Fertile Families—In the 1930 census, questions were asked about children under ten years in each home. While the findings do not indicate the birth rate, they do reveal some interesting comparisons: fertility is inversely related to community size; negroes have lower average fertility than whites (though those negro women who have any children have more); in general, fertility and economic status are inversely related, with the exception of the highest value-of-home groups.

NOTESTEIN, F. W. Differential Fertility in the East North Central States. Milbank Quart. 16, 2:173 (Apr.), 1938.

All That Can Be Told About Colds—Excellently summarizing the best available present-day information about colds, the author begins with the

warning that in the pamphlet will be found nothing new or startling, and no revolutionary ideas about the cause, prevention, or treatment.

OLESEN, R. Common Colds. Pub. Health Rep. Supplement No. 135 (May), 1938.

Three Generations of Rheumatism—Studies of the history of rheumatic infection among relatives of children with rheumatic disease and relatives of a control group of children revealed a high frequency among the relatives of the infected children and a low frequency among the others. These findings, indicative of a familial tendency to the disease, suggest a constitutional susceptibility, but cannot eliminate exposure as the important factor. More study is suggested.

READ, F. E. M., *et al.* The Frequency of Rheumatic Manifestations Among the Siblings, Parents, Uncles, Aunts, and Grandparents of Rheumatic and Control Patients. Am. J. Hyg. 27, 3:719 (May), 1938.

Baby's Habits—Written for nurses, but there is much here of interest to all health workers. There are recognized behavior patterns of each age level: when they are not reached it is a sign something is wrong. With sufficient outside pressure a degree of conformity to expected behavior patterns may sometimes be obtained, but this may not be desirable. We are learning now that rigid schedules may not be best; how much individual freedom to allow is the problem.

ROBERTS, D. I. Changing Concepts of Child Training. Pub. Health Nurs. 30, 5:283 (May), 1938.

Children Lose Immunity—An apparent increase in diphtheria among supposedly immunized children leads these authors to recommend that children treated in infancy be tested and immunized again if necessary when entering school.

SCHWARTZ, A. B., and JANNEY, F. E. The Need of Redetermining Schick Negativeness in School Children. J.A.M.A. 110, 21:1743 (May 21), 1938.

New Public Health Objectives—Repeat this mouthful to yourself: any disease or condition causing widespread morbidity, about which existing scientific knowledge, if applied, would prevent, cure, or alleviate, but is not applied for some reason, is a public health problem. When that has sunk in, you have a starting point for a profound public health discussion, of which this is an excellent example.

SINAI, N. Health As a National Asset. Pub. Health Nurs. 30, 5:287 (May), 1938.

The Grim Reaper's Stealth—In childhood, healthy growth and the progress of disease are easily distinguished because both show vigorous change; infirmity in childhood is not so easily recognized. In maturity changes due to aging are slow and not easily noticed, and infirmity may be confused with aging, which is a process of adaptation in structure and function. Criteria of healthy aging are not clear-cut; resilience is lessened, speed of reaction is curtailed, staying power is diminished, but portents of disaster are similar throughout life.

TODD, T. W. Aging Versus Infirmity. Sci. Month. June, 1938, p. 545.

Some Lives That Should Be Saved—Excess of deaths among males over females is highest in the "prime of life" and at this age the excess has been mounting steadily. Incidentally, it is higher in the United States than in Canada and other countries, so there must be some other than a biological factor responsible. The excess of male deaths in the 25–44 year group is important because such deaths should be postponable, and they occur at the time of greatest economic usefulness of the men.

WIEHL, D. G. Sex Differences in Mortality in the United States. Milbank Quart. 16, 2:145 (Apr.), 1938.

"Bachelor Scurvy" and Other Disorders—Three useful lectures on nutritional deficiencies and deficiency diseases beginning with a thought provoking quotation to the effect that the best fed people nowadays, though getting twice as much vitamin B as those on low incomes, consume less vitamin B than the parish poor in the early 19th century.

UNGLEY, C. C. Some Deficiencies of Nutrition. Lancet. 1, 16:875 (Apr. 16), 1938.

BOOKS RECEIVED

SEWERAGE AND SEWAGE TREATMENT. By W. A. Hardenbergh. Scranton: International Textbook Co., 1938. 396 pp. Price, $3.50.

HONEY AND HEALTH. By Bodog F. Beck. New York: McBride, 1938. 272 pp. Price, $3.00.

LES EPIDEMIES ET L'HISTOIRE. By Albert Colnat. Paris: Editions Hippocrate, LeFrancois, 1937. 191 pp. Price, $1.35.

MORE OF MY LIFE. By Andrea Majocchi. New York: Knight, 1938. 313 pp. Price, $2.50.

THE DIAGNOSIS OF SYPHILIS BY THE GENERAL PRACTITIONER. By Joseph Earle Moore. Government Printing Office, 1938. Price, $.10.

THE RADIOLOGY OF PULMONARY TUBERCULOSIS. By J. E. Bannen. Baltimore: Wood, 1937. 156 pp. Price, $4.50.

THE CHALLENGE OF TUBERCULOSIS. Addresses Presented at the Annual Luncheon Conference of the New York Tuberculosis and Health Association, March 1, 1938. New York: New York Tuberculosis and Health Association, 1938. 26 pp.

DIPHTHERIA MORTALITY AND MORBIDITY IN PITTSBURGH. By Mildred Stahl Fletcher. Pittsburgh: Federation of Social Agencies, 1938. 21 pp. Price, $.25.

CATALOG. CHEMICAL PUBLISHING CO. New York City. 126 pp. Price, $.10.

SANITARY ENGINEERING AS A CAREER. Chicago: Institute for Research, 1938. Price, $1.00.

PUBLIC HEALTH AND MEDICAL LICENSURE IN THE STATE OF MISSISSIPPI, 1798–1937. By Felix J. Underwood and R. N. Whitfield. Jackson: Tucker Printing House, 1938. 175 pp.

CAUSE AND PREVENTION OF DISEASE. By William Harvey Perkins. Philadelphia: Lea & Febiger, 1938. 713 pp. Price, $7.50.

CHEMICAL ANALYSIS OF FOODS AND FOOD PRODUCTS. By M. B. Jacobs. New York: Van Nostrand, 1938. 537 pp. Price, $6.00.

LIFE, HEAT AND ALTITUDE. By David Bruce Dill. Cambridge: Harvard University Press, 1938. 211 pp. Price, $2.50.

TUBERCULOSIS AND LEPROSY. The Mycobacterial Diseases. Editor—Forest Ray Moulton. The American Association for the Advancement of Science. Symposium Series, Vol. I. Lancaster: Science Press, 1938. 133 pp.

AMERICAN FOUNDATIONS FOR SOCIAL WELFARE. Compiled by Russell Sage Foundation Library. Rev. edition. New York: Russell Sage Foundation, 1938. 66 pp. Price, $.50.

HOW TO LIVE. By Irving Fisher and Haven Emerson. 20th ed. New York: Funk & Wagnalls, 1938. 422 pp. Price, $2.50.

MENTAL HEALTH THROUGH EDUCATION. By W. Carson Ryan. New York: Commonwealth Fund, 1938. 315 pp. Price, $1.50.

MATERNITY SERVICES. By Dame Janet Campbell. London: Faber & Faber, 1937. 56 pp. Price, $.50.

STATE RULES AND REGULATIONS GOVERNING SAFETY EDUCATION IN THE UNITED STATES. By Dr. F. R. Noffsinger. Washington: American Automobile Assn., 1938. 30 pp.

THE ROAD TO SAFETY SERIES. By Horace Mann Buckley *et al.*

A.	Away We Go. 56 pp.	Price $.20
B.	Happy Times. 137 pp.	.56
C.	In Storm and Sunshine. 152 pp.	.64
D.	In Town and Country. 216 pp.	.72
E.	Here and There. 285 pp.	.72
F.	Around the Year. 346 pp.	.76
G.	On Land and Water. 357 pp.	.80
H.	Who Travels There. 440 pp.	.88

New York: American Book Co., 1938.

ASSOCIATION NEWS

THE HEALTH CONSERVATION CONTESTS

THE Health Conservation Contests for cities and rural areas, conducted jointly by the United States Chamber of Commerce and the American Public Health Association, have completed another year. Elsewhere * announcement has been made of the winners for 1937, during which year the City Contest completed its ninth year and the Rural Contest its fourth. The Rural Contest is supported financially by the W. K. Kellogg Foundation, and the City Contest by several insurance companies.

Among the outstanding features of the 1937 Contests were: the participation by the Canadian provinces in the Rural Contest, the two new special Contests for excellence in tuberculosis and syphilis control, and the general expansion of both the Rural and City Contests in the United States. The Canadian Contest, new in 1937, was sponsored jointly by the Canadian Public Health Association and the American Public Health Association.

Both the City and Rural Contests showed substantial growth in the number of areas participating. Of the urban population in the United States, more than 3 million additional persons were included in participating cities in 1937 than in 1936, while in the Rural Contests in the United States there was an increase of almost 17 per cent in the number of rural units submitting schedules.

The Canadian rural units set a remarkable all-time record by enrolling almost 100 per cent of their units, and of these units more than 90 per cent submitted schedules. To Quebec Province goes the international record of enrolling 35 units and having 32 submit completed schedules. All together, 37 states, 4 Canadian provinces and Hawaii were included in the areas competing for awards.

It was apparent to the Grading Committee at its April meeting that the interest in the Health Conservation Contests is increasing and not waning; for example, in 1937, 263 cities participated and of these, 26 were new cities, while 241 rural units enrolled, of which 34 were new. Most encouraging in the schedules were the many improvements in basic public health which were reported. In no previous year have so many additions to personnel been made, in no other year have we seen so much improvement in the office equipment of health departments and in no previous year has it been possible to cite so many activities or such intensification of existing activities in the local programs.

There has been a significant shift between the City and Rural Contests because of the fact that, with the growth of organized rural full-time health service, many smaller cities are now corporate parts of rural units. There were 15 cities which have been enrolled in the City Contest which in 1937 took their place as a corporate part in the participating rural units. All together, across the years, there are 57 cities formerly participating in the City Contest which are now a part of rural units.

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* *A.J.P.H.*, June, 1938, p. 795.

Field service to enrolled cities and counties has been at a high level in 1937. In addition to the 17 rural units representing 23 counties in Canada which were given field service, there were 120 individual county rural units and 19 districts embracing 64 counties which were visited in the United States. One hundred fifty-six rural visits were made to 207 rural counties. Funds have been available only to a limited extent for field service to cities but 55 visits have been paid to cities and, as a result, certain important areas are now included for the first time in the Contest. This field service, in addition to the visits to state health departments, made personal contacts with local health departments in 28 states, 2 provinces, and the District of Columbia. Since the establishment of the Rural Contest in 1934, 343 different rural units representing 387 counties in the United States have been visited, in addition to the 23 Canadian counties, or a total of 410 counties in the two countries.

While emphasizing the important part which the local business man plays in the Health Conservation Contests, a well informed physician recently stated, "If there has been a recession in business, there has been no recession by business men in their interest and effort to make their communities safe for the democracy of public health."

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Harry S. Allen, M.D., 322 N. 6 St., Ironton, O., Health Commissioner

Will H. Aufranc, M.D., Health Office, Kennett, Mo., District State Health Officer

Seth S Barnes, M.D., 222 Independence St., Cape Girardeau, Mo., District State Health Officer

Edgar E. Berg, M.D., Flavel House, Astoria, Ore., Clatsop County Health Officer

Arthur D. Blackburn, M.D., Court House, Circleville, O., Pickaway County Health Commissioner

Howard E. M. Boocks, M.D., East Main St., Logan, Ohio, City Health Commissioner

Walter J. Broad, M.D., Geneva, Ala., Geneva County Health Officer

Enoch M. Bryan, M.D., Fredericktown, Mo., District State Health Officer

Andrew Carney, 121 Prospect St., Westfield, N. J., Executive Officer, Board of Health

Warren D. Carter, M.D., C.P.H., Box 625, Morganton, N. C., Burke-Caldwell District Health Officer

Dr. Gonzalez Corbalan Trumbull, Casilla 318, Santiago de Chile, S. A., Jefe del Departamento de Sanidad Internacional del Sercio de Salubridad Publica de Chile

Charles L. Coyle, M.D., Court House, Coquille, Ore., Coos County Health Officer

John D. Fuller, M.D., Santa Cruz County Hospital, Santa Cruz, Calif., County Health Officer

G. G. A. Herzog, M.D., Highway 66, Cuba, Mo., County Health Officer

Shelton E. Johnson, M.D., 5810 Cowen Place, Seattle, Wash., Specialist Physician, U. S. Dept. of the Interior

Alfred H. MacLaren, M.D., City Hall, Pendleton, Ore., Director, Umatilla County Health Unit

Charles W. Meinershagen, M.D., Salem, Mo., District State Health Officer

Joseph R. Morrell, M.D., 2533 Eccles Ave., Ogden, Utah, President, State Board of Health

William J. Sullivan, M.D., Kirksville, Mo., District State Health Officer

Dan P. Trullinger, M.D., Rm. 304, Court House, Oregon City, Ore., Acting County Health Officer, Clackamas County Health Unit

Luther P. Walter, Jr., M.D., City County Health Unit, El Paso, Tex., Assistant Director

Laboratory Section

David M. Baldwin, 1118 Washington Ave., Philadelphia, Pa., Bacteriologist, John Wyeth & Bro., Inc.

Georgene W. Blauer, Rt. 4, Box 238, San Jose, Calif., Student

Evalyn J. Cowan, 901–6th Ave., Seattle, Wash., Assistant Bacteriologist, State Dept. of Health

Felix E. Fernandez Garcia, M.D., Luis Estevez 461, Vibora, Habana, Cuba, Chief, Bacteriological Dept., National Laboratory

Maude W. Fos, 1960–9W., Seattle, Wash., Bacteriologist, State Dept. of Health

John T. Glenn, Jr., Glenolden, Pa., Bacteriologist, Mulford Biological Laboratories, Sharp & Dohme

Maud Gober, State Board of Health, Jackson, Miss., Bacteriologist

Josie Haried, State Dept. of Health, Lansing, Mich., Senior Chemist

J. V. Irons, Sc.D., 705 E. 17th, Austin, Tex., Assistant Director of Laboratories, State Dept. of Health

Paul W. Kabler, M.D., Ph.D., State Dept. of Health, University Campus, Minneapolis, Minn., Assistant Chief of Laboratories, Division of Preventable Diseases

E. Lynn Kisner, 12 Municipal Courts, St. Louis, Mo., Supervisor of Chemistry, Health Division

William V. Knoll, M.D., 1200 N. State, Los Angeles, Calif., Clinical Laboratory Worker, Los Angeles General Hospital

Alice McElroy, 1225 Walnut St., Alameda, Calif., Student

Carrie A. Moorman, 1417 Smith Tower, Seattle, Wash., Bacteriologist, State Dept. of Health Laboratories

Questa G. Mountain, 1417 Smith Tower, Seattle, Wash., Laboratory Technician, State Dept. of Health

Charles R. Nicewonger, 159 Tamalpais Rd., Berkeley, Calif., Student

Bernice M. Pedersen, 1417 Smith Tower, Seattle, Wash., Laboratory Technician, State Dept. of Health

Norman B. Powell, 212 E. Parkway Drive, Columbia, Mo.

Frederick P. Sparks, M.D., Kootenay Lake General Hospital, Nelson, B. C., Canada, Medical Health Officer and Director of City Laboratory

Alexander I. Teplow, 426 N. Virgil Ave., Los Angeles, Calif., Technician, Los Angeles County General Hospital

Ernesto Trelles y Duelo, Edificio Govea 13 y 18 Vedado, Havana, Cuba, Chief Chemist and Bacteriologist, Havana Water Works

Vital Statistics Section

Margaret O. Swenson, State Office Bldg., St. Paul, Minn., Statistician, Division of Vital Statistics, State Dept. of Health

George K. Traver, 396 Union Ave., West Haven, Conn., Registrar of Vital Statistics

Public Health Engineering Section

Robert R. Balmer, Jr., 17 Eden St., Salem, Mass., Junior Sanitary Engineer, State Dept. of Public Health

A. R. Baron, Fredericktown, Mo., District State Public Health Engineer

Theodore J. Bommer, 327 E. Stoddard, Dexter, Mo., Public Health Engineer, State Board of Health

John M. Borden, 605 Jackson St., Oregon City, Ore., Clackamas County Sanitarian

James B. Carey, 2352 Winchester Ave., Ashland, Ky., Eastern District State Sanitary Engineer

Carl V. Erickson, Urbana and Champaign Sanitary District, Urbana, Ill., Manager

Wallace G. Grange, 316 N. 2nd E., Price, Utah, City Sanitarian

Richard S. Green, 101 Willow Ave., Somerville, Mass., Senior Sanitary Engineering Aid, Division of Sanitary Engineering, State Dept. of Public Health

William A. Hasfurther, 7723 S. Ada St., Chicago, Ill., Sanitary Engineer, State Dept. of Health

Edward O. Madison, 2411 N. Charles, Baltimore, Md., Assistant State Director, Community Sanitation Program, U. S. Public Health Service

Harold F. Rock, 46 Petrova Ave., Saranac Lake, N. Y., Junior Sanitary Engineer, State Dept. of Health

Claude Strickland, 1703–40 St., S., St. Petersburg, Fla., Supt., Pinellas County Anti-Mosquito District

Carmen A. Sullivan, Box 103, Ontonagon, Mich., Sanitarian, State Dept. of Health & Children's Fund

Food and Nutrition Section

M. Thomas Bartram, Ph.D., Food and Drug Admr., U. S. Dept. of Agr., Washington, D. C., Assistant Bacteriologist

Martha Koehne, Ph.D., 75–18 Ave., Columbus, O., Nutritionist, State Dept. of Health

Ralph L. MacNeil, 3433–90 St., Jackson Heights, L. I., N. Y., Chemist, Bureau of Food and Drugs, Dept. of Health

Esther Pickios, 55–21–138 St., Flushing, L. I., N. Y., Student

William J. Wollesen, Jr., 711–6 Ave., San Francisco, Calif., Trainee, Sanitary Inspector, University of California School of Public Health

Child Hygiene Section

Allen O. Gruebbel, D.D.S., State Board of Health, Jefferson City, Mo., Dental Director, Child Hygiene Division

Marie A. Hagele, M.D., 1819 W. Polk St., Chicago, Ill.

Frank T. Jones, D.D.S., 306 State Bldg., San Francisco, Calif., Dentist, State Dept. of Public Health

Arthur W. Stahl, M.D., 238 Republic Bldg., Denver, Colo., Denver Public Schools

G. D. C. Thompson, M.D., 816 Oregon Bldg., Portland, Ore., Director, Division of Maternal and Child Health, State Board of Health

Industrial Hygiene Section

Arthur M. Master, M.D., 125 E. 72 St., New York, N. Y.

Public Health Education Section

Alice M. Bahrs, Ph.D., 10 & Montgomery Sts., Portland, Ore., Head of Science Dept., St. Helen's Hall Junior College

Darrell A. Dance, P. O. Box 202, Mays Landing, N. J., Sanitary Inspector, State Dept. of Health

Alfred Korach, M.D., 1640 Cambridge St., Cambridge, Mass., Visiting Lecturer in Public Health Administration, Massachusetts Institute of Technology

Elizabeth McGuire, 1017 W. 31st, Austin, Tex., Organizer of County Children's Councils, State Dept. of Health

Grace C. Nason, Box 303, Moab, Utah, Public Health Nurse, State Board of Health

Alexander J. B. van Beyer, Dr.P.H., 308–16 S. Craig St., Pittsburgh, Pa., Director, Prevention of Blindness Dept., Pa. Assoc. for the Blind

Public Health Nursing Section

Catherine O. Beagin, R.N., P. O. Box 1854, Miami, Ariz., School Nurse

Helen P. Bott, Price, Utah, County and School Nurse, State Board of Health

Lula M. Champion, 106 E. Bexar, Crystal City, Tex., County Public Health Nurse

Eunice Lamona, R.N., 6028 Harcourt Ave., Los Angeles, Calif., Chief Nurse, Board of Education

Mabel A. Patton, State Board of Health, Raleigh, N. C., Consultant in Public Health Nursing, State Board of Health

Margaret L. Payton, R.N., Court House, Oregon City, Ore., Senior Public Health Nurse, Clackamas County Health Unit

LaVerna Peterson, 2329 Monroe Ave., Ogden, Utah, Acting Director, Division of Public Health Nursing, State Board of Health

Lydia Potthoff, R.N., 727 E. Willette, Phoenix, Ariz., Nursing Consultant, State Board of Health

Helene K. Sabert, R.N., Board of Health, Honolulu, T. H. (Student until August), Nursing Supervisor

Muriel Schopp, 3085 Andover Drive, St. Louis County, Mo., Public Health Nurse

Louise Schott, R.N., Benton, Mo., District State Health Nurse

Marcella A. Schumer, Perryville, Mo., District State Health Nurse

Laura P. Stead, 35 E. Lakeview Ave., Columbus, O., Field Representative, State Dept. of Health

Luella M. Stickney, State Board of Health, Helena, Mont., Maternal and Child Health Field Advisory Nurse

Hedwig B. Trauba, 130 State Capitol Bldg., Salt Lake City, Utah, Assistant Director and Orthopedic Nursing Consultant, State Crippled Children's Service

Martha J. West, R.N., P. O. Box 769, Price, Utah, Public Health Nursing Supervisor, State Board of Health

Rosannah Winter, R.N., 3211 S. W. 10 Ave., Portland, Ore., Field Nursing Consultant, State Board of Health

Miriam V. Wolf, 216 Morrison Drive, Toledo, O., Field Nursing Consultant, State Dept. of Health

Unaffiliated

Alice Marshell, 400 Paxton Bldg., Omaha, Nebr., Executive Secretary, Nebr. Tuberculosis Assoc.

Charles A. Newhall, 6303–21 Ave. N. E., Seattle, Wash., Chemical Engineer, State Dept. of Health

DECEASED MEMBERS

W. Alfred Buice, M.D., Dr.P.H., Chelsea, Okla., Elected Member 1925, Fellow 1934

W. F. Elgin, M.D., Glenolden, Pa., Elected Member 1900, Fellow 1922

W. H. Frost, M.D., Baltimore, Md., Elected Member 1909, Fellow 1923

Frank L. Watkins, M.D., Great Falls, Mont., Elected Member 1927, Fellow 1931

Robert W. Fowler, M.D., Richmond Hill, L. I., N. Y., Elected Member 1937

Arthur M. Gibbs, M.D., C.P.H., Hamburg, Ark., Elected Member 1931

Henry S. Plummer, M.D., Rochester, Minn., Elected Member 1924

Bertha K. Spector, Ph.D., Chicago, Ill., Elected Member 1919

CLOSING DATE FOR SUBMITTING APPLICATIONS FOR FELLOWSHIP

SEPTEMBER 1 is the latest date the Committee on Eligibility can accept Fellowship applications. This date is set in order that there may be sufficient time to route them through the preliminary steps necessary before they receive final consideration at the hands of the Governing Council during the Kansas City Annual Meeting. Eligible members who wish to apply for Fellowship are therefore urged to submit their applications in the near future.

EMPLOYMENT SERVICE

The Employment Service will register persons qualified in the public health field without charge. Public health nurses are registered with the Joint Vocational Service, 122 E. 22 Street, New York, N. Y., with which the Association coöperates.

Replies to these advertisements, indicating clearly the key number on the envelope, should be addressed to the American Public Health Association, 50 W. 50 Street, New York, N. Y.

POSITIONS AVAILABLE

Wanted: Deputy Commissioner of Health. Midwestern city of 130,000. Under 45 years of age; particularly to be in charge of health of public schools. Give education, experience, qualifications and references. **W376**

The Civil Service Commission announces nurse positions in the Indian Field Service (including Alaska), Department of Interior. They are:

Public Health Nurse, $2,000 a year

Graduate Nurse (General Staff Duty), $1,800 a year

Nurse Technician (Bacteriology and Roentgenology Combined), $1,800 a year

Closing date for receipt of applications are as follows:

(a) July 18, 1938, if received from states other than those named in (b) below.

(b) July 21, 1938, if received from the following states: Arizona, California, Colorado, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Wyoming.

Write: U. S. Civil Service Commission, Washington, D. C.

POSITIONS WANTED

HEALTH OFFICERS

Experienced physician, administrator, epidemiologist and teacher, now employed, with C.P.H. from Johns Hopkins, and 14 years' public health background, will consider position. Prefers epidemiology in city or state department. Excellent references. **A355**

Physician, aged 38, with excellent training in medicine, pediatrics, and epidemiology, is completing work for Dr.P.H., and will consider appointment in administration, preferably in county health work. **A366**

Physician, M.D.; Class A medical school; M.P.H., Harvard School of Public Health; extensive experience in pediatrics and school medical service; also background of county health administration and teaching in medical school, will consider expanded opportunity in teaching or research. **A302**

Physician, M.D., St. Louis University; postgraduate in eye, ear, nose, and throat; 10 years' experience in public health administration as director of county health units and epidemiologist with state department; also experience in welfare administra-

POSITIONS WANTED (Cont.)

tion; prefers administrative public health position in central or western state. Excellent references. Available July 1. **A373**

Physician, experienced in health administration of cities and states, will consider attractive opening in maternal and child health or health education. **A343**

Physician, M.D., Class A school; M.S.P.H., University of Michigan, 1937; now serving as district state health officer, seeks full-time administrative position in city or county. **A367**

Physician, M.D., McGill; C.P.H., Johns Hopkins; excellent background of communicable disease control and school health service, seeks position as epidemiologist or public health administrator. **A368**

CHILD HYGIENE

Experienced physician, M.D. and Ph.D., University of Minnesota; specially qualified in maternal and child hygiene, directing state and local programs; will consider position of better sort. **A238**

HEALTH EDUCATION

Young woman, M.A. in Health Education, Teachers College, Columbia University; with splendid international experience, seeks position as director of health education, with preference for New York City. **H369**

Sanitarian and health education activity worker with seven years' experience; Dr.P.H., Michigan; desires position in health education and/or social research work. **M375**

LABORATORY

Young man, A.B. in Chemistry, Phillips University; M.S. in Public Health Laboratory Work, University of Michigan; desires position in state or city health department laboratory. **L304**

Young woman, M.S., University of Michigan, experienced in biochemistry, bacteriology, water analysis and blood work, will consider research position. **L322**

Bacteriologist and pathologist with wide administrative experience; Ph.D., Brown University; will consider leading position in his field. **L371**

SANITARY ENGINEERING

Sanitary engineer, courses at Rutgers University, with 17 years' experience in design, research and construction of water and sewage plants, as well as aerial pollution surveys, desires position, preferably research. **E321**

Graduate sanitary engineer with service under U. S. Public Health Service and state departments of health, especially interested in filtration plant design and operation and shellfish sanitation, seeks employment. **E356**

MISCELLANEOUS

Young man, age 27, S.B., Massachusetts Institute of Technology, 1933; A.M., Boston University, 1935; M.S. in Biochemistry, University of Michigan, 1937; 2 years' graduate work in public health. Experienced in chemical, bacteriological and biochemical research; teaching experience in college hygiene, desires position in a food industry involving research or control. **M374**

NEWS FROM THE FIELD

NATIONAL HEALTH CONFERENCE

THE National Health Conference, called at the suggestion of President Roosevelt, and under the direction of the President's Interdepartmental Committee to Coördinate Health and Welfare Activities, will be held in Washington July 18–20.

Miss Josephine Roche, former Assistant Secretary of the Treasury, is Chairman of the Interdepartmental Committee, appointed by the President August 15, 1935, and consisting of officials of the Social Security Board and the Treasury, Departments of Agriculture, Interior, and Labor. The committee has been assisted in its preliminary work by the Technical Committee on Medical Care, comprising experts from the U. S. Public Health Service, the Children's Bureau, and the Social Security Board.

NEW JERSEY AND NEW YORK PREMARITAL EXAMINATIONS FOR SYPHILIS

EFFECTIVE July 1, 1938, Chapter 126 of the New Jersey Public Laws of 1938 requires that each applicant for a marriage license in New Jersey must present a certificate from a qualified physician stating that the applicant has submitted to a standard laboratory blood test for syphilis and that in the opinion of the physician the person either is not affected with syphilis or is not in a stage of that disease which may become communicable. These certificates for each party to be married are attached to the marriage license and remain with the license until the certificate is filed with the State Bureau of Vital Statistics.

No marriage license will be issued in New York State on and after July 1, 1938, unless both parties submit statements that the applicants have been examined and found to be free from syphilis in a stage which may become communicable, according to rules and regulations for the administration of the new amendments to the Domestic Relations Law. The statement, to be submitted on a form provided, must be signed by a licensed physician together with an official statement from a laboratory approved for that purpose showing that the applicant was given an examination including a standard serological blood test for syphilis.

The date of examination will be interpreted to be the date on which the physician takes the specimen of blood from the applicant and which shall not be more than the 20th day prior to that on which the license is applied for unless such time shall have been extended (limited to 90 days). In forwarding completed marriage records to the State Department of Health by the clerk in each case there shall be attached thereto the court order, physician's and laboratory's statement after notation thereof in the register.

PAN AMERICAN SANITARY CONFERENCE

THE 10th Pan American Sanitary Conference will be held in Bogota, Colombia, September 4–18. Some of the subjects to be discussed are: social security in its medical and public health aspects, a Pan American campaign against venereal disease, control and prevention of yellow fever, recent achievements in the study of leprosy and the campaign against the disease, and the problem of germ and virus carriers in epidemiology.

ALABAMA COUNTIES

DR. J. N. Baker, State Health Officer of Alabama, has announced that there is now a full-time health organization in each of the 67 counties of Alabama.

TRAFFIC SAFETY TRAINING

THE National Institute for Traffic Safety Training will be held at the University of Michigan, Ann Arbor, Mich., August 8–20.

Technical courses will be given as follows:

Traffic Accident Reports and Records—1st week only
Traffic Safety Education in Schools—2 one week courses
Examining Drivers' License Applicants—1st week only
Handling Drivers With Bad Records—2nd week only
Traffic Engineering
Training Investigators in Accident Prevention Bureaus
Safety Organization and Public Education—2nd week only

Some of the topics of general meetings will be:

What Is Safety? The New War on Traffic Accidents. What We Know About Accidents and How We Know It. The Road. The Car. The Driver. The Pedestrian. Speed. Engineering. Enforcement. Mock Intoxication Trial. School and Child Safety. Public Education and Organization.

For information, write: Sidney J. Williams, 20 North Wacker Drive, Chicago, Ill.

SAFETY EDUCATION

NEW York University announces a plan to establish a national center for safety education and accident control, planned primarily for the instruction of teachers, in the University's Division of General Education, July 1. The project will be set up under a special grant of funds from the National Conservation Bureau.

As part of the program, a maximum of 18 research fellowships in safety education, with stipends ranging from $400 to $1,200, will be offered for graduate students enrolled in the University's School of Education during 1938–1939 academic year. Applications for fellowships can be secured from the Fellowship Committee on Safety Education, Division of General Education, New York University, New York, N. Y. They must be filed by July 25, 1938.

COLORADO PUBLIC HEALTH ASSOCIATION

THE Colorado Public Health Association has been organized with A. L. Beaghler, M.D., President; Roy L. Clear, M.D., Vice-President; Omer R. Gillett, M.D., Treasurer; and Lucile O'Reilly, Secretary.

An application has been received for affiliation with the American Public Health Association. The association represents a consolidation of what formerly was The Colorado Council of State-wide Health Agencies and aims to include all the professional public health workers in Colorado.

ALABAMA HEALTH DISTRICT

THE East Alabama Health District, comprising the Counties of Bullock, Chambers, Lee, Macon, Randolph, Russell, and Tallapoosa, has recently been organized with headuarters at Opelika. The new unit is the outgrowth of a field training base at Opelika, which has been conducted by the Alabama State Department of Health.

In connection with the unit, the Rockefeller Foundation has for several years sponsored a clinical research study in tuberculosis.

Arthur H. Graham, D.P.H., M.D., of Opelika, has been named Medical Director of the new health district.

CONSUMERS ORDER USE OF SANITARY UTENSILS

GREENBELT, Md., has the first Coöperative drugstore in the United States.

When it opened April 21, a committee of consumers had ordered that only paper cups be used at the soda fountain.

SOUTH CAROLINA PUBLIC HEALTH ASSOCIATION

THE South Carolina Public Health Association held its annual meeting at Myrtle Beach, S. C., May 23 to 25. The program of several sessions included such subjects as syphilis control, maternity care, general practice and its relation to public health, orthopedic problems, today's trend in public health, malaria control, public health dentistry, the county vital statistics program, public health nursing in crippled children's program, interpretation of laboratory findings, the trend of public health activities in pediatric practice, the sanitation problem created by the touring public, the prevention of blindness, etc.

The following officers were elected:

President, W. B. Furman, M.D., Pickens
President-Elect, G. E. McDaniel, M.D., Columbia
Vice-President, J. R. Wise, Newberry
Secretary-Treasurer, Mrs. Frank George, R.N., Columbia

PUBLIC HEALTH ASSOCIATION OF NEW YORK CITY

THE Public Health Association of New York City held its annual meeting in New York May 18.

New officers elected to serve until the next annual meeting are:

President, Hazel Corbin
First Vice-President, Arthur I. Blau, M.D.
Second Vice-President, George T. Palmer, Dr.P.H.
Secretary-Treasurer, Frank Kiernan

The Executive Board is composed of 12 persons, 6 of whom are elected at each annual meeting. The Directors elected at the May 18 meeting, to serve until 1940, are:

Arthur P. Miller, C.E.
John Oppie McCall, D.D.S.
Ralph S. Muckenfuss, M.D.
John L. Rice, M.D.
Leopold M. Rohr, M.D.
Alfred E. Shipley, M.D., Dr.P.H.

The Directors who were elected at the annual meeting in 1937, to serve until the annual meeting in 1939, are:

Donald B. Armstrong, M.D.
Thomas J. Duffield
Leonard Greenburg, M.D.
Helen Manzer, Ph.D.
Josephine B. Neal, M.D.
Clarence L. Scamman, M.D.

ILLINOIS HEALTH OFFICERS

THE Illinois State Department of Health announces that the following physicians have been placed in charge of recently established full-time health districts:

James A. Poling, M.D., Freeport—District 4, Lee and Ogle Counties

Carl A. Peterson, M.D., Moline—District 5a, Henry and Mercer Counties

Sandor Horwitz, M.D., Peoria—District 6, Marshall, Peoria and Putnam Counties

John P. Walsh, M.D., Greenview—District 11, Case, Logan and Mason Counties

Robert H. Bell, M.D., Carlinville—District 12, Calhoun, Greene, Jersey, Macoupin, Morgan, Scott, and (emergency) Bond, Madison, and Montgomery Counties

Nettie A. M. Dorris, M.D., Paris—District 13, Champaign, Coles, Douglas, Edgar and Vermilion Counties

Joseph L. Bryan, M.D., Xenia—District 14, Clay, Clinton, Effingham, Jasper, Marion, and (emergency) Fayette Counties.

Roy W. Harrell, M.D., Carbonvale—District 16a, Jackson, Monroe, Perry, Randolph, Washington, and (emergency) St. Clair Counties.

Roland R. Cross, M.D., Dahlgren—District 18, Franklin, Hamilton, Jefferson, Wayne and White Counties.

Lewis S. Barger, M.D., Golconda—District 20, Gallatin, Hardin, Johnson, Massac, Saline, Pope and Williamson Counties.

It is planned to have 20 health districts in Illinois on a full-time basis.

CONNECTICUT PUBLIC HEALTH ASSOCIATION

THE 23rd annual meeting of the Connecticut Public Health Association was held at the Stratfield Hotel in Bridgeport, on May 25.

Approximately 200 persons attended

the several sessions which covered a variety of public health problems. In addition to leading health workers in Connecticut who participated in the program, contributions were also made by Earle G. Brown, M.D., Nassau County Health Commissioner, Mineola, N. Y., James L. Barron, C.E., Director, Division of Sanitation, Westchester County Department of Health, White Plains, N. Y., John A. Ferrell, M.D., Dr.P.H., Associate Director, International Health Division, Rockefeller Foundation, New York, N. Y., and Mary McManus, R.N., Superintendent, Tuberculosis Nursing Service, New York City Department of Health.

Officers for the ensuing year were elected as follows:

President, Professor Ira V. Hiscock, New Haven

President-Elect, Warren J. Scott, S.B., Hartford

Vice-President, Richard O'B. Shea, M.D., Bridgeport

Secretary-Treasurer, Benjamin G. Horning, M.D., Hartford

Representative on Governing Council of the American Public Health Association, Louis J. Dumont, M.D., New Britain

PERSONALS

Central States

CORNELIUS A. HARPER, M.D.,* of Madison, Wis., having completed 34 years as state health officer, is now the senior public health official in the United States from the point of unbroken service. He was appointed to the State Board of Health in 1902 and became the executive in 1904.

JOHN A. MURPHY, M.D., has been appointed Health Commissioner of East Liverpool, Ohio, to succeed ROY C. COSTELLO, M.D.†

DR. BROCKWAY D. ROBERTS, of Wayland, Ia., has been appointed Professor of Hygiene and Director of Student Health at Knox College, Galesburg, Ill.

DR. LOUIS W. SPOLYAR, of Indianapolis, Ind., will be in charge of the new Department of Industrial Hygiene created by the Indiana State Department of Public Health.

Eastern States

S. S. GOLDWATER, M.D.,* since 1934 Commissioner of the Department of Hospitals of New York, N. Y., has announced his retirement, but will continue in office until the appointment of his successor.

GEORGE LAMBERT, M.D., who has been Acting Health Officer, has been appointed Health Officer of Killingly, Conn.

ARTHUR D. MARSH, M.D., has been pointed Health Officer of Scotland, Conn.

J. H. MCLAUGHLIN, M.D., succeeds EMILY B. CHATFIELD, M.D.,† as Health Officer of Voluntown, Conn.

THOMAS PARRAN, M.D.,* Surgeon General of the U. S. Public Health Service, was the recipient on June 1 of the degree of Doctor of Science, conferred by Columbia University, New York, N. Y. On June 8, at the 106th commencement of New York University, he received the degree of Doctor of Public Health.

WILFRED J. ROBINSON, M.D., has been appointed Health Officer of East Windsor, Conn., succeeding DR. GEORGE E. PORTER, deceased.

JAMES A. TOBEY, DR.P.H.,* of New York, N. Y., Director of Nutrition of the American Institute of Baking, was awarded the honorary degree of Doctor of Laws at the commencement exercises of Southeastern University in Washington, D. C., on June 7.

ABRAHAM WHITE, PH.D., Assistant Professor of Physiologic Chemistry,

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* Fellow A.P.H.A.
† Member A.P.H.A.

Yale University, New Haven, Conn., received the $1,000 prize and bronze medal of Eli Lilly and Company, Indianapolis, Ind., at the American Chemical Society meeting in Dallas, Tex., April 18, for his work on sulfur metabolism and protein hormones.

Southern States

DR. FRANCIS J. CLEMENTS, formerly of Palmyra, has been appointed Health Officer of Sussex County, Va., succeeding DR. JOHN B. H. BONNER.†

DR. ABRAM J. DAVIS, Director of Health of Burke County, Ga., was elected President of the Southeast Georgia Public Health Association at its meeting April 9, in Waynesboro.

SAMUEL R. DAMON, PH.D.,† of Montgomery, Ala., formerly with Johns Hopkins University School of Medicine, Baltimore, Md., has been placed in charge of the laboratories of the Alabama State Department of Health, succeeding JAMES G. MCALPINE, PH.D.,† resigned.

DR. JULIUS E. DUNN, formerly Health Officer of DeKalb County, has been appointed Health Officer of Lauderdale County, with headquarters in Florence, Ala.

DR. WILLIAM L. GILBERT, of Atlanta, Ga., Health Officer of Fulton County, has resigned on account of ill health, but will continue in the position until his successor has been named.

DR. GEORGE M. HARMS, of Chatom, Ala., has been appointed Health Officer of Washington County, succeeding DR. CHARLES M. COLE, resigned.

JOSEPH A. MORRIS, M.D.,† of Oxford, N. C., has been named President of the North Carolina Public Health Association.

DR. GEORGE E. NEWTON was recently named Health Officer of Autauga County, with headquarters in Prattville, Ala. He held a similar position in Lauderdale County.

DR. FRANCIS W. UPSHUR, of Richmond, Va., has been appointed to direct a program for the control of venereal disease in that city.

Western States

DR. CHARLES A. DAVLIN, of Alamosa, has been elected President of the Denver, Colorado, State Board of Health, succeeding DR. PAUL J. CONNOR, of Denver.

J. C. GEIGER, M.D.,* Director of Public Health of the City and County of San Francisco, Calif., has had conferred upon him the honorary degree of Doctor of Laws by the University of Santa Clara, at its commencement June 4, on the Campus, Santa Clara, Calif., for his humanitarian activities in the public service.

DR. JULIO R. SOLTERO, of Lewistown, Mont., has been reappointed Health Officer of Fergus County.

DR. WENDELL NOALL has been appointed Health Officer of Ogden, Utah, succeeding DR. WILBURN J. WILSON.

DEATHS

MAURICE CROWTHER HALL, PH.D., Sc.D., D.V.M.,† Chief of the Division of Zoölogy of the National Institute of Health, U. S. Public Health Service, Washington, D. C., died May 1, after a long illness. Though well known for many studies in the field of parasitology, with special reference to the helminths, Dr. Hall was perhaps best known for his discovery in 1921 that carbon tetrachloride is an effective vermifuge for men and animals. In 1925 he announced that tetrachlorethylene is as effective as carbon tetrachloride and apparently much safer.

* Fellow A.P.H.A.
† Member A.P.H.A.

ROYAL S. COPELAND, M.D., Life Member A.P.H.A., U. S. Senator from New York, died June 17, in Washington, D. C. He became a member in 1918, a Charter Fellow in 1922, and a Life Member in 1936.

CONFERENCES AND DATES

American Association of Motor Vehicle Administrators. Detroit, Mich. September.

American Association of School Health. Kansas City, Mo. October 24–28.

American Association of State Registration Executives. Kansas City, Mo. October 25–28.

American Dental Association. Hotel Statler, St. Louis, Mo. October 24–28.

American Dietetic Association—21st Annual Meeting. Hotel Schroeder, Milwaukee, Wis. October 9–14.

American Federation of State, County, and Municipal Employees. Atlanta, Ga. August 29.

American Hospital Association. Dallas, Tex. September 26–30.

American Public Health Association — 67th Annual Meeting. Hotels Muehlebach, President, Kansas Citian, Kansas City, Mo. October 25–28.

American Public Works Association. New York, N. Y. October 3–5.

American Society of Civil Engineers. Rochester, N. Y. October 12–14.

American Veterinary Medical Association. New York, N. Y. July 5–9.

American Water Works Association:
- Central States Section. Hotel Windsor, Wheeling, W. Va. August 17–19.
- Virginia Section. Hotel Robert E. Lee, Lexington, Va. August 25–26.
- Rocky Mountain Section. Townsend Hotel, Casper, Wyo. September 12–13.
- Michigan Section. Bancroft Hotel, Saginaw, Mich. September 14–16.
- New York Section. Nelson House, Poughkeepsie, N. Y. September 22–23.
- Minnesota Section. Minneapolis, Minn. September 29–October 1.
- Wisconsin Section. Milwaukee, Wis. October 10–12.
- Missouri Valley Section. Hotel Fort Des Moines, Des Moines, Ia. October 13–15.
- Southwest Section. Biltmore Hotel, Oklahoma City, Okla. October 17–20.

Association of Military Surgeons of the United States. Mayo Clinic, Rochester, Minn. October 13–15.

Association of Women in Public Health —17th Annual Conference. Excelsior Springs, Mo., October 22–23; Kansas City, Mo., October 24.

California Association of Dairy and Milk Inspectors. Santa Barbara, Calif. September.

Conference of State Laboratory Directors. Kansas City, Mo. October 24.

Conference of State Sanitary Engineers. Kansas City, Mo. October 24.

Florida Public Health Association. Hollywood, Fla. December.

International Association for Identification. Columbus, Ohio. August 16–20.

International Association of Milk Sanitarians. Cleveland, Ohio. October 19–21.

International Society of Medical Health Officers. Kansas City, Mo. October 24.

Medico-Military Inactive Duty Training Unit—under auspices of the Mayo Foundation. Mayo Clinic, Rochester, Minn. October 13–15.

Michigan Public Health Association. Lansing, Mich. November 9–11.

Mississippi Valley Conference on Tuberculosis—25th Annual. Twelve states represented. Hotel Statler, St. Louis, Mo. September 21–24.

National Dairy Association. Columbus, Ohio. October 8–15.

National Health Conference, called under President Roosevelt's Interdepartmental Committee to Coördinate Health and Welfare Activities—Miss Josephine Roche, Chairman. Washington, D. C. July 18–20.

National Hospital Association (Negro). Hampton, Va. August 14–16.

National Institute for Traffic Safety Training. University of Michigan, Ann Arbor, Mich. August 8–20.

National Safety Council. Chicago, Ill. October 10–14.

New England Sewage Works Association. (Joint meeting with the New York State Sewage Works Association.) Hotel Bond, Hartford, Conn. October 6–8.

New Mexico Public Health Association. Las Vegas, N. M. October 30, 31, November 1.

New York State Sewage Works Association—Fall Meeting (joint meeting with New England Sewage Works Association). Hotel Bond, Hartford, Conn. October 6–8.

Northern California Public Health Association. January, 1939.

Southern Branch, American Public Health Association—7th Annual Meeting; and Southern Medical Association. Oklahoma City, Okla. November 15–16, 1938.

Symposium on Mental Health. Auspices of the American Association for the Advancement of Science—Section on Medical Sciences. Richmond, Va. December 27–31.

Texas Public Health Association. San Antonio, Tex. November 7–9.

Third International Congress for Microbiology. Waldorf-Astoria Hotel, New York, N. Y. September 2–9, 1939.

FOREIGN

Royal Sanitary Institute. Portsmouth, England. July 11–16.

Fourth International Congress for the Unity of Science. Girton College, Cambridge, England. July 14–19.

Scientific Congress of Doctors and Dentists—" ARPA." Prague, Czechoslovakia. July 21–25.

International Medical Society for Psychotherapy—10th Annual Congress. Balliol College, Oxford, England. July 29–August 2.

British Dental Association. Belfast, Ireland. July 29–August 3.

International Meeting for Cell Research. Anatomical Institute, Zurich, Switzerland. August 7–13.

International Congress on Housing and Town Planning. Mexico City, Mexico. August 13–20.

Sixteenth International Physiological Congress. Zurich, Switzerland. August 14–18.

British Association for the Advancement of Science. Cambridge, England. August 17–24.

International Veterinary Congress, Thirteenth. Zurich and Interlaken, Switzerland. August 20–27.

International Congress for the History of Medicine, Ninth. Zagreb, Yugoslavia. September 3–11.

Pan American Sanitary Conference, Tenth. (Last Conference was held in Buenos Aires, 1934.) Bogota, Colombia. September 4–18.

Special International Conference on Sewage Works and Disposal. Glasgow, Scotland. September 12–18.

Third United International Congress of Tropical Medicine and Malaria. Amsterdam, The Netherlands. September 24–October 1.

Eighth International Congress of Industrial Accidents and Occupational Diseases. Frankfort-am-Main, Germany, September 26–30.

Pan-American Congress of Municipalities. Havana, Cuba. November.